

**THE PURPOSES,
PRACTICES, AND
PROFESSIONALISM
OF TEACHER
REFLECTIVITY**

*Insights for Twenty-First-Century
Teachers and Students*

EDITED BY
Edward G. Pultorak

The Purposes, Practices, and Professionalism of Teacher Reflectivity

IN PRAISE FOR *THE PURPOSES, PRACTICES, AND PROFESSIONALISM OF TEACHER REFLECTIVITY*

“Reflection on professional practice is key to improved education examining both the affective dimensions and the cognitive outcomes of professional and personal actions. Edward G. Pultorak and his colleagues provide an in-depth examination of the various dimensions of reflectivity that not only provide new perspectives, but raise critical questions about the role of reflectivity in education. *Reflectivity* and *inquiry* have a symbiotic relationship as twin stimulators that strengthen each other through mutual analysis and development. The book provides original research as well as comprehensive summaries of the field, illustrations of reflectivity in practice, and its potential as a driving force in improving education.”

— **W. Robert Houston**, John and Rebecca Moores Professor of Education, Distinguished Teacher Educator, University of Houston

“Everyone working in the educational field and interested in teachers’ reflectivity should own this book. It situates teacher reflectivity as a provision of methods, tools, and practices that can cause an important impact on teacher performance, teacher retention, student learning, teacher education, and teachers’ professional development. Written in a very accessible way, each of the eighteen chapters studies teacher reflectivity from a different perspective. Theoretical and research viewpoints are discussed, classroom practice and implementation aspects are considered, preservice as well as professional development practices are described, and the international contexts are outlined. Because of the thorough and detailed contribution of all the authors, *The Purposes, Practices, and Professionalism of Teacher Reflectivity* becomes a self-contained and comprehensive reference resource as well as a manual on teacher reflectivity. It will be a useful guide for teaching practitioners, researchers, lecturers, teacher trainers, and decision makers. A real must for all participants in the enhancement and innovation of education today and tomorrow.” — **Arno Libotton**, senior lecturer, Free University Brussels, former president of the Association of Teacher Educators Europe

“This book offers a superb array of literature and research studies around teacher reflectivity. Its coverage is both broad and deep. The research is rigorous and exciting in both range and intensity. I was particularly taken by the historical and critical dimensions that explored teacher reflectivity over time and place. The argument that the work of teachers requires them to be reflective practitioners who can make complex professional judgements based on knowledge of students, pedagogy, curriculum content, and teacher research is powerfully presented.

Ideas about the ‘reflective practitioner,’ teachers’ ‘technical rationality,’ ‘practical action,’ and the importance of ‘critical reflection’ are vigorously presented through a careful analysis of theory, research, and practice in schools and teacher education programs. There are many refreshing ideas and practical ways that teacher reflectivity can be taught and developed in dialogic spaces that show both great wisdom and experience by the writers involved. As a teacher educator I will use this book to enhance my skills in critical reflectivity and to develop my skills to analyze and explore my learning as it shapes and reshapes my world view and the actions I take as a professional educator to work toward reforms in schools, teacher education programs, and to critique and act on my work and my world.

I commend this quality publication as a way for professional educators to analyze and work toward researching their work to develop and encourage reflective professionals to engage in critical reflection throughout their entire career. As part of this process professional educators need work toward constructing educational systems that build in the time and place for dialogic spaces for educators to explore, share, and develop reflective practitioners to work collaboratively to enhance student learning and teacher performance.” —**Maxine Cooper**, University of Ballarat, Australia, former president of the Australian Teacher Education Association

“Teaching is clearly a complex activity. In this book, *The Purposes, Practices, and Professionalism of Teacher Reflectivity*, the authors comprehensively examine the learning-centered community as a support for the integrated learning and development of P–12 students through inquiry-based practice. Each chapter reflects a common vision of teaching and learning grounded in research and practitioner reflective knowledge. Finally, the authors challenge teachers through effective teacher education to reflect on their own practice, consider school community and family contexts in connecting concepts, and develop protocols to enhance student learning. This book is a must for all educator libraries.” —**Boyce Williams**, vice president of international relations, National Council for Accreditation of Teacher Education (NCATE)

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Edited by Edward G. Pultorak

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To the students, teachers, and teacher educators that expressed a need for this publication, may you find this resource to be of value in your educational endeavors.

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Introduction

Chapters included in this book are the fruit of the past six years. In 2004, the Association of Teacher Educators (ATE) appointed a national commission on teacher reflectivity. The primary charge of this commission was, and continues to be, to provide a very thorough and detailed investigation of the impact of teacher reflectivity, if any, on teacher performance, teacher retention, student learning, and other important aspects of teaching, learning, and teacher education. For the past six years, the commission has promoted scholarly and spirited discussions surrounding issues of teacher reflectivity by leading presentations, featured sessions, and hearings at national conferences, as well as conducting research studies and literature reviews directly related to the charge of the commission.

The concern is that many teacher education programs have a teacher reflection component and/or model; however, the literature provides very little information regarding the impact of reflection on teacher performance, teacher retention, and student learning. This text includes theory, research, and practice appropriate for teacher educators, teacher candidates, classroom teachers, school administrators, and educational researchers. The content should be useful for teacher education programs, graduate programs in education, and professional development for educators (teachers, administrators, school board members, researchers, and so forth).

The goal of this book is to enrich the literature by providing practical and research-based chapters that offer greater clarity about the particular kinds of reflection that matter and avoid talking about teacher reflection

generically, which implies that all kinds of reflection are of equal value. To help achieve this goal, a national and international call for manuscripts regarding the title of *The Purposes, Practices, and Professionalism of Teacher Reflectivity: Insights for Twenty-First-Century Teachers and Students* was advanced. Chapters submitted for inclusion were double blind reviewed and directly related to this title in an attempt to advance the knowledge base and understanding of reflectivity as it relates to teaching and learning. This book will address five very pertinent sections: (1) Teacher Reflectivity in Theory and Research, (2) Teacher Reflectivity in Teacher Education Programs, (3) Teacher Reflectivity with Teacher Candidates, (4) Teacher Reflectivity in Schools and Classrooms, and (5) Teacher Reflectivity and International Perspectives.

The first section includes chapters on reflectivity within the teacher research cycle, purposes and practices of reflectivity in teacher development, reflection as a social problem-solving process, and the nature of reflection in experience and action. The second section consists of chapters on reflectivity and working to change dispositions of new teachers, outcomes of teacher education portfolios' on reflective thinking, what we know and don't know about teacher reflection, and facilitating instructional differences using a teacher reflectivity model. The third section contains chapters related to self-assessment and analyzing reflectivity in teaching, the importance, origins, and tools to foster reflection, and examining teachers' development through critical reflection. The fourth section provides chapters on strategies for educational leaders to guide beginning teachers through reflectivity, the role of inquiry-oriented learning communities in enhancing reflectivity, using journals to close the gap between reform and teaching practice, and the role of teaching standards in teacher reflectivity. Section 5 concludes the text and provides chapters from an international perspective as they relate to lesson-based discussion and learning to teach, what reflection is and what it does, and the Meno paradox of teaching reflection in teacher education.

The intent of this text is not to provide an exhaustive completion of much needed research surrounding issues of teacher reflectivity but rather to help enrich the literature and provide greater clarity regarding its impact on teaching and learning. Perhaps the included chapters will be of value and benefit. Readers are encouraged to replicate studies found here, formulate and research additional questions, collect important data, and

share results with other professionals and policy makers. A sincere and deep appreciation is certainly due to the authors that have shared their work in this special publication.

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SCHOLARLY DOUBLE-BLIND PEER REVIEW PROCESS

Manuscripts submitted for this publication were anonymously peer reviewed by three or more referees unless they were clearly inappropriate based on manuscript call specifications such as length, style, or topic.

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**TEACHER REFLECTIVITY IN
THEORY AND RESEARCH**

Reflectivity within the Teacher Research Cycle

Promoting Prospective Teachers' Progress toward an Inquiry Stance

*Jason Jude Smith, Diane Yendol-Hoppey,
and Rejoyce Soukup Milam*

ABSTRACT

Teacher education programs identify reflection as a key component of prospective teacher professional preparation. However, little empirical evidence exists to identify the influence of prospective teacher reflection on the way they conceptualize work, performance, or attention to student learning. Drawing on data from the teacher research experience within our teacher education program, we wondered: What is the impact of teacher reflection, generated by the teacher research process, on prospective teachers' progress toward an *Inquiry Stance*? This study analyzes 102 reflections on the teacher research process, describes how participating in teacher research enhances prospective reflectivity, the cultivation of an inquiry stance, and considers data that creates a shift to focus on student learning and enhances their understanding of their professional responsibilities.

Reflection should be a critical component of the work all teachers do (Schön, 1983). Because there are both formal and informal structures that encourage reflectivity, those who construct teacher education programs cannot assume that prospective teachers have the knowhow to engage in meaningful reflection. Instead, the ability to reflect on one's practice should be treated as a skill that can be taught and learned (Brookfield, 1987). Accepting this, those who develop and administer teacher education programs must consider ways in which the skills necessary to be

a *reflective practitioner* can be purposefully and intentionally nurtured throughout the prospective teacher's experiences (Zeichner and Liston, 1996).

Just as there are multiple processes that can facilitate reflectivity, there is a range of products that those who engage in reflection are more likely to produce. Teachers who are constantly questioning their own practice are more likely to make use of reflection in ways that benefit both their professional practice and student learning (Caro-Bruce and Klehr, 2007). Teachers who adopt this mindset toward their practice are described by Cochran-Smith and Lytle (2009) as having an *Inquiry Stance*. They see this stance as a "way of knowing and being" (p. viii) rather than simply a skill. We agree that this way of knowing is an appropriate and important goal for teachers and that assuming this stance helps educators make the most of the wonderings their reflections generate.

In an effort to guide prospective educators toward an *Inquiry Stance*, processes and products that can cultivate reflection should be part of the teacher education program. Teacher research, also called practitioner research, teacher action research, teacher inquiry or practitioner inquiry, can help cultivate an *Inquiry Stance* as reflection becomes a vehicle to improve their practice and their students' learning. Teacher research moves educators beyond informal reflection, often a result of happenstance, to intentional study where questions and problems generated by reflection are studied and made public (Dana and Yendol-Hoppey, 2009). To develop a more concrete understanding of both processes that generate intentional reflection and products of reflection, prospective teachers can engage in teacher research in order to develop an *Inquiry Stance* toward teaching (Cochran-Smith and Lytle, 2009).

For those teachers who engage in systematic investigation of their own practice, reflection is a critical skill (Cochran-Smith and Lytle, 1993). Sophisticated use of the teacher research process requires reflection at each stage. First, questions guiding teacher research emerge as a product of teacher reflecting on their own experiences and problematizing their own practice. Second, reviewing relevant literature, best practices, and the work of others leads educators to potential solutions around which research can then be conducted. Reflection is critical at this stage in synthesizing potential trajectories for investigation into a cohesive teacher research agenda. Third, the work is "a part of" rather than "apart from" the

everyday practice of the teacher-researcher (Dana and Yendol-Hoppey, 2009). To attend to this, teachers must reflect on which methodology might best answer their research questions.

The methodology the teacher-researcher chooses should answer the above research questions in a way that does not interfere with the routines of their classroom. Constructing a sound methodology that addresses both the complexities of the research and the complexities of the classroom requires deep reflection (Dana and Yendol-Hoppey, 2009). This reflection is equally important through data collection and analysis. Often the products of teacher research are criticized for their lack of generalizability. While findings of teacher research are usually of less value to larger bodies of literature on teaching practice, findings that are reflected on by the teacher-researcher have the potential to provide, for the students in the teacher's classroom, new learning opportunities that can drive both teacher practice and student achievement.

Fourth, reflection continues even after data is analyzed. While there are various levels of formality to communicate teacher research findings, all teacher-researchers should reflect on findings, allowing reflection to both answer existing questions and drive the creation of new questions. In this way, teacher research allows for a constant cycle of reflection designed to continually improve professional practice and student learning (Lieberman and Miller, 2001). Even when a potential answer to a problem-based question is developed, reflection continues to be critical to the teacher research process as the teacher-researcher tries to identify embedded assumptions and implications for his/her future teaching performance.

Considering the benefits of teacher research, the skills needed to be a proficient teacher-researcher are increasingly becoming part of professional preparation programs. Teachers who can both reflect on and research their own practice are more suited to be responsive to student needs (Zeichner and Liston, 1996). This belief closely aligns with the definition of *Inquiry Stance*. By teaching prospective educators not only to reflect but also to engage in formalized research, teachers assume an important role in enhancing student learning.

Reflection beyond the classroom is also an important, and too rarely actualized, component of teacher research (Frankes, Valli, and Cooper, 1998). Teachers are often involved only in policy implementation. While

many teachers, especially those who value reflection, lament the top-down mandates that guide so much of their work, teachers are ill prepared to formally evaluate existing policy and even less prepared to influence or craft new policy (Desimone, 2002). By preparing teacher candidates to funnel their reflections into viable research projects, teacher preparation programs can help reinvent teaching as a profession in which decision-making responsibility is shared across stakeholders.

Teacher research has been explored in great detail in literature. What has received less attention is the influence the teacher research process has on reflectivity that leads to shifts in teaching performance. In light of the multiple opportunities for reflection inherent in the teacher research process, we wondered what shifts prospective teachers who engaged in teacher research make in their teaching performance as a result of reflection during the teacher research cycle. Further, if teacher research does lead to shifts in the depth and breadth of reflection, engaging in the research process would be a viable tool for professional development and a necessary component for improving teacher performance and student learning.

METHODS

The purpose of this qualitative study was to investigate what happens to teaching performance as students in a five-year teacher education program engage in reflection through engaging in teacher research. We further wanted to understand how teacher research and reflection within the teacher research cycle promoted prospective teachers' progress toward the development of an *Inquiry Stance*. Thus, the research question driving this study was: What is the impact of teacher reflection, generated through the teacher research process, on prospective teacher performance? We defined teacher performance as the act of planning, carrying through to completion, and making sense of an instructional episode.

Interpretivism as a theoretical framework guided this study as the approach seeks to understand the world as it is experienced and made meaningful to participants (Crotty, 2005). As we moved forward with our research, several additional subquestions emerged. These subquestions included:

1. How do prospective teachers who engaged in action research demonstrate reflectivity related to the teacher research cycle?
2. What shifts in understanding do perspective teachers undergo as a result of reflection during the teacher research process?
3. What levels of reflection and complexity exist in perspective teachers' understanding of, and progress toward, an inquiry stance?

Context

This study occurred within the College of Human Resources and Education at West Virginia University. Within the college, there are several pathways to teacher certification. One of these pathways is a five-year program, which awards both a bachelor's degree and a master's degree. The coursework and clinical experiences in this program are guided by the "Ten Characteristics of a Novice Teacher." One of these characteristics states, "The novice teacher should be a *reflective practitioner*." The characteristic defines *reflective practitioner* as "one who attempts to make sense of events in the educational environment and who critically examines choices to inform practice."

In addition to coursework in content and pedagogy, the program also includes 1,000 hours of clinical placements. Students are placed in 1 of 31 Professional Development Schools (PDS) in the area surrounding the university. The students generally remain in the same PDS for the final three years of the program. In addition to traditional teaching responsibilities, the program also requires that students submit a portfolio that serves to document their progress toward acquiring each of the ten characteristics. Further, students are required to engage in teacher research at their PDS.

These prospective teachers attend seminars that serve to provide them with an understanding of the teacher research process. Then, with help from both university-based and PDS-based mentors, students craft a teacher research proposal, engage in teacher research, and then create a teacher research report that documents findings and conclusions.

Participants

One hundred and two prospective teachers participated in this study. These students represented a cohort of fifth year students in the five-year

teacher education program. Students in the program, during their last semester, take a teacher leadership course. The teacher research project described above, along with the teacher leadership course, provided the data which facilitated our research.

Data Sources

Prospective teachers' written analysis of their teacher research experiences served as the primary data source for this qualitative study. These analyses were part of an assignment for the teacher leadership course. This assignment asked students to convert their teacher research report into either an article for publication or a policy brief. The article or policy brief accounted for 70% of the grade for this project. The other 30% of the grade was based on a two- to three-page analysis of their experience. This analysis, based on both the article-policy brief activity and the teacher research project, served as the primary data source for this research. All 102 prospective teachers in the cohort completed the assignment and thus there were 102 responses used in our analysis.

Since these written reflections were a result of a course activity, feedback from the teacher research conference that served as the capstone event for this same cohort of prospective teachers was used to triangulate the attitudes and perceptions reported on these reflections. We received evaluation forms from 62% of the participating prospective teachers. Additionally, after completion of the capstone teacher research and after reviewing the evaluation data, we held a semi-structured focus group of three student volunteers to further develop the findings culled from this study. This focus group covered a variety of topics, including teacher research, and lasted one hour. These data sources triangulated our findings.

Data Analysis

Building on the interpretive theoretical framework, data analysis began as the three of us independently open coded by breaking down, examining, comparing, conceptualizing, and categorizing data (Strauss and Corbin, 1990). We began by dividing the data into three sets, assigning a set to each researcher, and then individually open coding the prospective teach-

ers' reflections on teacher research using HyperResearch or Nvivo software. This open coding indicated that even with the structure provided in the assignment, our participants varied in their responses. Thus, we identified meaningful units of analysis from the open coding by returning to the research question and using that question to collapse codes and engage in data reduction. Data excerpts varied in length, from single sentences to full paragraphs.

After engaging in this initial independent open-coding process, we met to share our resulting codes. Together, we compared all of the data as a research team and again using the constant comparative method we honed categories-themes across the data. As we reached consensus on the emerging categories-themes, we identified critical junctures, shifts, and variation in stance development as instrumental in connecting reflection to teacher performance within the teacher research process. In reporting findings, we crafted three assertions.

Trustworthiness and Limitations of the Study

The researchers established trustworthiness in this study by using three data sources and using multiple analysts. The three data sources included the written reflections, the focus group, and the teacher research conference evaluation forms. The analyst triangulation provided multiple lenses and consensus building in the data analysis and opportunities for coding and recoding that strengthened our portrayal of the data and the trustworthiness of the study.

This study also has limitations. First, the primary data set comprised a set of questions and was graded based on the rubric found in table 1.1. The fact that the reflection was graded surely influenced the nature of the reflection, a dilemma faced across teacher education programs. Additionally, two of the three members of the research team were highly involved with the teacher research course. We recognize this emic role as both a limitation and a strength. This qualitative study is not designed to be generalizable and the onus of the responsibility is on the reader to determine if these findings offer insight into teaching and learning about reflectivity, inquiry stance, and the influence on teaching performance in their own context.

Table 1.1. Rubric Used for Evaluation of Reflections**Part 3: Stance Reflection Statement****1. Stance Reflection Statement Should**

- a. Be two to three typed, double-spaced pages.
- b. Be properly edited for content and mechanics.
- c. Rooted in your entire Action Research Experience.

DEDUCTION: 5 points if length requirement is not met
 5: Content and Mechanics are Excellent; Points deducted for not meeting this standard
 5: Clear Reflection on the AR Process; Points deducted for not meeting this standard

2. Should Answer the Following Questions:

- a. How has your development of an *Inquiry Stance* evolved throughout the Action Research process?
- b. What role has *Reflection* played in your completion of the Action Research process? Include multiple points in the process.
- c. What outlets for *Teacher Leadership* do you envision from your Action Research? Include both this project and other potential outlets.
- d. How would you evaluate the Action Research process in general and your participation in the process? Provide specific critique on the process and yourself.

5: Clear Reflection on Stance Development; Points deducted for not meeting this standard
 5: Clear Reflection on Reflection; Points deducted for not meeting this standard
 5: Clear Reflection on Teacher Leadership; Points deducted for not meeting this standard
 5: Clear Reflection on Evaluation; Points deducted for not meeting this standard

Total Points (out of 30)

FINDINGS

Assertion 1: Prospective teachers who engaged in action research demonstrated reflectivity at a variety of critical junctures.

Within this assertion we identified three critical junctures that encouraged prospective teachers to engage in reflection. These critical junctures included identifying a question, looking beyond themselves as the center of the instructional process, and analyzing data. In each case, the juncture provided a unique stimulus and created an expectation for the prospective teacher to engage in reflection.

The first critical juncture, finding an inquiry question, is the first activity that generated significant reflection. Often, prospective teachers are primarily concerned with demonstrating competence rather than identify-

ing and making dilemmas of practice public. By engaging in reflection related to identifying a research question, prospective teachers identified the importance of dialoging with other teachers about areas of teaching performance they wanted to explore:

When I first decided on my Action Research topic I knew it was something I felt passionately about. However, the more I spoke with teachers at my PDS about student struggles, the question became much more important to me.

In this case, the prospective teacher is highlighting the importance of professional dialogue about a felt difficulty as a stimulus for reflection that caused movement in her teaching practice.

Even after identifying a question to drive their research, as evidenced in the following excerpt, prospective teachers contemplated and morphed their question as they began early analysis of their data:

Also, through reflections I was able to modify my guiding question. At first I thought I'd determine which station "best" influenced student recall of multiplication facts. The further I progressed in my teacher research (and the more I observed my students), I realized it was more important to focus on my individual student learning styles/needs and not the group as a whole.

In each of these cases, the expectation to identify a question or dilemma of teaching performance provided prospective teachers the stimulus for reflection and also resulted in the prospective teacher monitoring the adequacy of the initial question as a result of emerging data.

The second critical juncture that emerged as influencing prospective teacher performance occurred as prospective teachers turned their reflection toward considering and reconsidering the instructional strategy that they implemented as a part of their teaching performance. Many times prospective teachers are unable to look beyond themselves to study the impact of their teaching performance (Glickman, Gordon, and Ross-Gordon, 1995). As a result of reflecting on the impact of their instructional strategies, many times these prospective teachers changed their teaching performance in light of "consciously" reflecting on their instruction.

As I practiced classroom inquiry, my research question caused me to consciously think about how my instructional strategies will make an impact on my students' learning.

Reflection in this case was the prospective teacher's conscious effort to understand how the instructional strategy led to student learning.

After identifying a question and choosing an instructional strategy believed to address the identified need, prospective teachers faced a third critical juncture as they reflected on the data they collected both during and after the completion of the inquiry. The task of analyzing data necessitated a level of data-based reflection that often pushed prospective teachers to change their teaching performance, as indicated in the following example:

With that said, I know that, before analyzing data in my own Action Research, I graded assignments and provided feedback for students, but never really devoted adequate time to thinking about and looking at the performance of individual students across time or the class as a whole.

As indicated, reflection required at this critical juncture played an essential role in this prospective teacher's view of assuring that she attends to both individual student needs and class needs as a part of her teaching performance.

Assertion 2: Prospective teachers engaged in teacher research demonstrated reflectivity that resulted in a variety of teaching performance shifts.

*Reflectivity Caused a Shift from Instructional Practice
Driving Teaching Performance to Student Needs Driving
Teaching Performance*

One of the strongest and most significant shifts in teaching performance emerged as prospective teachers moved from having a particular instructional practice driving their teaching performance to a careful analysis of student needs driving their teaching performance (87 examples). One student explained that the teacher research process caused him/her to reflect on student learning needs, which created an important shift:

Through teacher research, I have become aware that not all students will succeed right away if I teach in one way, but with anecdotal notes, constant observations, and modifications to fit all learner needs, students can be very successful.

Reflection through the inquiry process facilitated this prospective teacher's movement toward student needs driving her teaching performance. Similarly, other prospective teachers share the following

Being required to consider if what/how I was teaching was actually working made me more aware of my role as an educator. That is, it's not as simple as planning a lesson or following a curriculum map; rather, it's about the learning needs of one's students and what works/doesn't work for each class.

I was able to look at which students benefited from the study organizers and this allowed me to see my students more as individuals who learn differently than a class of students who all can do the same work.

The idea is to use data-based decision making to develop solutions to problems identified within the classroom or to find inventive ways to increase student achievement. The ability to understand new ideas, adapt to innovative practices, and share those results continues the process of teaching inquiry. Throughout the Teacher Research process I have developed a deeper commitment to student learning as well as my learning through inquiry.

These prospective teachers' reflections, stimulated through action research, demonstrate a shift in their teaching performance from planning the lesson that they felt comfortable delivering to planning a lesson that will facilitate learning for all.

In this final example of shift toward looking at student needs, the prospective teacher describes her growth toward inquiry stance development.

After my experience with teacher research, I feel that my inquiry stance is greatly affected. I didn't know what I was doing when I first walked through my first practicum classroom as a young tutor. I designed my first lesson plan . . . based on how I thought my students would learn it best, but it turned out I was just writing lessons that catered toward my own learning needs. Soon, I began to research in order to best discover the most effective way to teach concepts, content, and skills. Teacher research was a big part of that effort. Collecting the students' test/quiz scores and other data sources formatively throughout my research was also a way for me to exhibit research-based instruction. As a result, I was able to change my teaching methods in order to best fit the class period and the students.

In this excerpt, the prospective teacher explained how she moved from looking at her teaching through her own learning lens to directing her teaching performance to what best fit her students. Important to note in this example was the connection this prospective teacher made between data, reflection, and *Inquiry Stance* development.

Reflectivity Caused a Shift toward Questioning One's Own Teaching Performance

An *Inquiry Stance* requires being able to pose a question; and identifying a question to pose requires reflection on one's practice in a way that makes felt difficulties transparent to the teacher. Given the importance placed on being able to raise dilemmas or questions of practice presented in the literature (Freire, 1970; Snow-Gerono, 2005), prospective teachers' ability to acknowledge the shift they made toward questioning their own teaching performance is important to note. Consider this example:

As a result of this experience, I am probably more willing than some other beginning teachers to look at my teaching in a critical sense and accept constructive criticisms for improvement.

In this excerpt, the prospective teacher refers to reflection as "looking at her teaching in a critical sense" and has become more interested and comfortable in the idea of critical friendship (Bennett et al., 1997) from a mentor or peer.

Another prospective teacher came to the same conclusion as she compared the stance toward teaching that she assumed at the beginning of their teacher research experience and the stance possessed at the end of her teacher research experience.

At first, when trying to come up with an idea for Teacher Research, I was just trying to think of some topic to get the project done. After going through the whole process, I realize how important it is to begin the Teacher Research process by questioning one's own teaching methods while being a part of a teaching community. This requires us to be an active part of the teaching and school culture; it hopefully and eventually plays a critical role in our own professional development, school improvement, and learning experience for our students.

Of the 102 prospective teachers we worked with, 55 others produced similar insights.

Finally, without prompting, prospective teachers also identified the necessity of problem posing in the cultivation of an *Inquiry Stance*:

The Teacher Research process has helped me not only to learn to see the “problems” in a classroom, but also to determine ways to solve these problems and make myself a better teacher. In possessing this knowledge, I believe I can say that I have developed an “inquiry stance” that has evolved through the Teacher Research process and will continue to evolve throughout my years of teaching as I continue to examine my teaching practices and find ways to improve student learning.

My Inquiry Stance has developed immensely throughout the Teacher Research process. I am much more aware of opportunities in which I should be questioning my methods and practices. I find myself looking for things to analyze and I look for a purpose in what I teach and how I teach now.

Based on a cluster of responses like these, prospective teachers have identified that this shift toward questioning is new and that reflecting on each component of their teaching performance is a part of embracing an inquiry stance.

*Reflectivity Caused a Shift Toward Becoming More
Observant During the Teaching Performance*

Even when prospective teachers marvel at the shifts made toward looking at students in new ways and raising questions about their own teaching, they realize the additional importance that observation plays in providing a stimulus for reflection that ultimately strengthens their teaching performance (45 examples):

Teacher research allowed me to develop a technique and try it out within my classroom. It also made me more observant as a teacher and facilitated reflection.

The goal I realized is more of a trial and error process where I as the researcher am paying more attention to what would make an effective learning experience.

In these excerpts, the prospective teachers identified that by prioritizing observation of their own students as a part of their teaching performance, they became more reflective about their teaching. Their student observations became the stimulus for their reflection:

My Teacher Research involved a great deal of personal observation and intuition—maybe more than I would have liked to indicate in the report. But the process of creating this report forced me to evolve this simple use of intuition in my assessment of students—it required me to establish evidence in my student’s work. This ultimately forced me to look deeper into their writing, which resulted in a better understanding of them and my topic at hand: voice. This, again, spawned more reflectivity in me, and brought about a necessity to be more articulate in my explanations and in my own writing abilities.

In each of these examples, the teacher’s observation skills became an essential part of teaching performance and the observation data served as a stimulus for reflection and a tool for enacting one’s inquiry stance.

Reflectivity Caused a Shift Toward Using Data to Target the Teaching Performance

Another stimulus the prospective teachers identified as creating an important shift was their focus on data (72 examples). Data served as a stimulus for reflection.

I feel that this opportunity has really prepared me to make critical decisions in the classroom about what practices are best for my students’ learning based on data collection and analysis.

Additionally, the teacher research process helped prospective teachers recognize the multiple kinds of data available within the classroom. This was particularly important given that these teachers are being prepared within a context of high stakes accountability.

Viewing things from a smaller scale, teachers at the elementary level collect an immense amount of data on a weekly basis (e.g., spelling and reading test

scores and math problems assigned out of a textbook), but may not analyze any of it until it comes time to send home midterm or final grades.

Finally, these prospective teachers also identified the important tie among data, reflection, and the way they conceived of their teaching performance.

But, I do not think I really understood the real importance of identifying a problem in teaching practice and using student collected data to come to a conclusion until I completed my teacher research final paper and had the time to reflect on what I implemented in the classroom and how it affected the students' learning.

In this excerpt, the prospective teacher identifies that having the time and expectation to reflect on what she had done was essential in her shifting her teaching performance to focus on student learning.

Reflectivity Caused a Shift Toward Becoming More Confident in Identifying the Teaching Performance that Leads to Student Learning

An unexpected but important outcome of this study was the role that the teacher research process and engaging in reflection at each stage of the process played in strengthening prospective teacher efficacy (Ashton and Webb, 1986). Within the context of high stakes accountability, educators today are expected to identify ways to strengthen student learning. Forty-seven prospective teachers indicated that they were more confident and willing to take more risks as a result of acquiring the skills of teacher research and engaging in reflection at each stage of the process.

When I finally had an opportunity to brainstorm ways to improve myself as a teacher and develop a plan for implementation, I felt in control of my host teacher's classroom for the first time.

I feel equipped to handle problems and improve my practice in the future by using the methods I learned in class.

My experience with Teacher Research has been one that has not only expanded my thinking as an educator but has given me the confidence as a researcher and as a leader.

In the following two examples, prospective teachers indicated that they felt more comfortable taking risks as they explored their teaching performance and the student learning generated:

I think that the Teacher Research process has been a definite learning experience [*sic*], but a good one. Whenever I was first approaching Teacher Research, I was more conservative in looking for strategies that I could have used in the classroom than I am today.

I have learned that it is necessary to step out of my comfort zone when teaching, seek out and try new strategies, and reflect on their effectiveness (whether this has to do with the strategy itself or my own performance, which I learned can be a contributing factor).

In these final two examples, prospective teachers indicated that they felt rewarded and in charge of their own learning as a result of engaging in teacher research.

If not for the Teacher Research process I would not feel as rewarded and accomplished about my intern experience. I also now understand the importance to continue these types of research-based study of our practices as teachers.

The teacher research process has helped me in seeing the importance of being proactive when having a question about something I am interested in learning. I have seen how working first hand with information pertaining to a question I have engages me and makes me feel a part of my own learning experience.

Each of these examples or products of prospective teacher reflection demonstrate the power that results from reflection within and across the teacher research process.

Reflectivity Caused a Shift in the Teaching Performance

The final shift identified was a shift in teaching performance. Almost every prospective teacher noted a shift in their teaching performance as a result of engaging in the teacher research process.

Before I had not modified lessons for students other than those with special needs. The students in my class were not students with special needs; however, I learned that they [my students] responded differently to the organizer which made me look at teaching differently, students differently, and change what I did.

These shifts collectively demonstrate the opportunities that the critical junctures of teacher research offers prospective teachers for reflection. By engaging in reflection at each of these points, the prospective teacher is able to make shifts in his or her teaching performance that help to cultivate an inquiry stance.

Assertion 3: A Continuum of Stance Development Exists that Influences Teaching Performance

Once we identified the critical junctures and common shifts present in our prospective teachers' understanding of their teaching performance, we were able to identify variation in their development of *Inquiry Stance* and in many cases this variation appeared tied to the sophistication of the prospective teacher's reflection. In an effort to demonstrate the variation in stance development and our sense that degree of stance development was influenced by level of reflectivity, we offer examples from three points along this continuum. For example, a lower-level example of stance development also demonstrated a lack of reflectivity.

It took me a few weeks of freaking out over my research to understand that the main point of Action Research is to determine if a certain teaching method/style works, or helps students better comprehend material, rather than conducting a scientific experiment.

This prospective teacher demonstrated a limited understanding of his/her stance, focusing on the teacher research as an assignment, and this prospective teacher did not link his/her own growth, learning, or development to reflection.

Similarly, in the following excerpt, a novice teacher still had not separated what he/she was doing from understanding the stance he/she was taking. Tellingly, this teacher showed very limited reflectivity, focusing

only on the final results of his/her teacher research instead of reflecting throughout the process.

Looking at the fact that the Pre-Reading activities did have benefits to my students was also a vindication of my own abilities as an educator. I was able to see that what I was doing was working and was helping students, and as a result, I know that these strategies will help other students and educators. If I had a lack of improvement in my students, I would still take that experience and be able to progress as a teacher. I could look at aspects of the experience that worked and take the positive away from what less enlightened people could deem a “failure.”

Once prospective teachers became familiar with the inquiry cycle, they developed a progressing *Inquiry Stance* and in conjunction with the discussion of their more developed *Inquiry Stance*, they became more reflective.

I have challenged myself by doing investigations, posing questions, collecting data, analyzing data and making changes in practice based on my new understanding and results and being able to share my results with others. I have evolved by becoming more knowledgeable in the process of how to research information and take that information and form my own research on a certain topic, such as writing.

Above, the prospective teacher based her emerging *Inquiry Stance* on the new understandings gained through the reflection process. She showed a more developed reflectivity, discussing reflection on her data, making changes based on that reflection, and finally forming hypotheses built around new understandings.

The next prospective teacher saw a direct link between his/her developing *Inquiry Stance*, and continual reflection.

As a reflective practitioner, I believe that my growth of inquiry stance is fairly evident. Action Research is heavily reliant on a researcher’s ability to reflect on past experiences to determine a target area of study. One does not conduct recovery research on a successful topic. Throughout the research, immense reflection was required. Action Research starts with an assumption of a strategy that works well. However, once engaged in the project, the researcher must use observation of the current implementation to reflect and

modify the project for a better classroom fit. I believe that as this researcher, I have gained so much reflective ability.

Finally, in these stronger examples of *Inquiry Stance*, the prospective teacher identified a variety of shifts that have occurred as a result of engaging in reflection at each stage of the teacher research cycle.

Before action research, I studied inquiry learning and how to incorporate it into my teaching. We always discussed about how it is important for our students to have an inquiry mind. Until we started action research, I don't feel that I had a certain inquiry stance. In general, I would think about different strategies to use in the classroom, but it wasn't as in depth as how the AR [teacher] process takes it. Action Research really made me think about the context of the classroom and what could I do that would improve my students in learning and my teaching as well. . . . There is not going to be one method that is going to work for every student. What can I do to help him/her? Inquiry is a technique that I hope to continue throughout my career as a teacher.

This prospective teacher, with a more developed *Inquiry Stance*, began to see both inquiry and reflectivity as deeply intertwined with being a growing, improving teacher. In this final example, a prospective teacher also made his/her own connection between their own reflectivity and his/her development of inquiry stance.

My development of an Inquiry Stance has evolved significantly throughout the Action Research (AR) process because before the process, I didn't truly see the importance of having an Inquiry Stance. . . . I've learned that truly good educators are constantly looking for ways to improve their teaching because being a teacher means you never stop learning. Although what we teach our students might remain the same over the years, how we teach is something that will always be changing. Year after year, we will have new and different students that require new and different ways of teaching. Good teachers will look at what they have done in the past, reflect upon its effectiveness, and make adjustments for the future.

We found the more sophisticated prospective teachers linked their stance development to their engagement in reflectivity. They discussed reflection in more forms and in more detail in examples that showed a

more developed understanding of *Inquiry Stance*. As a result, there is some evidence that a connection exists between the development of stance and the level of reflective practice. This link should be more carefully examined in order to understand how we can better foster this growth in prospective teachers.

DISCUSSION

This study described what happens to teaching performance as students in a five-year teacher education program engage in reflection during the teacher research cycle, and it sheds light on how teacher research and reflection within the teacher research cycle promoted prospective teachers' progress toward the development of an *Inquiry Stance*.

The study suggests a variety of implications for teacher education programs interested in cultivating reflective practitioners. First, teacher education programs can benefit by asking students to identify questions and problems, looking beyond themselves as the center of the instructional process, and analyzing data. If we expect prospective teachers to adopt an *Inquiry Stance* and we know that reflection requires students, data, and real professional dilemmas, then the importance of field experiences that support these activities must not be underestimated. Quality field experiences will strengthen teaching performance when they provide a stimulus for reflection and the cultivation of an *Inquiry Stance* toward teaching.

Second, it is apparent that teacher educators should not assume that preservice teachers have the skills necessary to engage in critical reflection. The variation in the depth and breadth of the reflections we examined suggest that some of our participants have far more developed understandings of reflection than others. While there are multiple explanations for this variation, we believe that by making clearer expectations for reflection, more preservice teachers are likely to engage in the sophisticated reflection necessary to progress toward an *Inquiry Stance*.

In light of our findings, future research should attempt to explore more closely the link between each step of the teacher research cycle and the shifts in reflectivity occurring in each step. It would be beneficial to conduct this analysis using data that is not also used to evaluate progress. We recognize that while much of the reflection demonstrated by the students

in our sample is authentic, by utilizing an assessment as data, we also risk examining reflection that is, to some extent, “window dressing.”

We conducted our focus group after the grading period for the semester had ended, and we found that much of what the participants in that group said affirmed what we culled from the written reflections. We also understand, however, that even in these settings, students can feel pressure to respond a certain way. Thus, any research that seeks to examine the reflections of others must attend to the potential for subjects to guard their responses when those asking the questions are highly invested in the process designed to elicit the reflection.

Additionally, we feel that further investigation of the various levels of sophistication demonstrated in reflective comments, along with the various understandings of *Inquiry Stance*, is necessary. We discussed this in our third assumption, but we also were careful to limit our analysis to interpreting participant comments rather than evaluating them. However, we feel that there is clear differentiation in the sophistication of the reflection our subjects discuss, as well as the reflection implied in other comments they make. There are various frameworks for engaging in this type of analysis, but we are weary of suggesting a dichotomy exists for evaluating reflection and stance development.

Finally, further study aimed at evaluating teacher research as a tool to foster reflectivity, both for preservice and in-service educators, is critical to maintaining teacher research as a viable tool for professional development. In a standards-driven culture, conversations that explore teacher research as a tool to directly impact student learning are important. Teacher research, when it results in progress toward an *Inquiry Stance*, has benefits for student learning that may not be ascertained by quantitative study but instead become evident through interpretivist studies like this one.

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Purposes and Practices of Reflectivity in Teacher Development

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ABSTRACT

This review examines definitions of reflectivity that relate to teachers as decision makers and problem solvers. The need for reflectivity in teacher education programs is illustrated and benefits that can be derived from reflective practices are described. Methods for fostering reflectivity in teacher education candidates and teachers are explained. Differences between experienced and novice teachers' development are discussed to illustrate the importance of experience in developing a habit of reflection. Benefits of reflectivity are discussed in terms of academic achievement, self-confidence, and self-assurance. Conclusions indicate that teacher educators must be mindful of the need to reinvent teacher education programs that provide increased opportunities for teacher education candidates and teachers to develop knowledge of the purposes of reflectivity and skill in reflective practices.

Teacher education candidates gain increased knowledge and skills during their university programs and often experience an increase of confidence in their teaching abilities. For many new teachers, however, this confidence often wanes once they are faced with the day-to-day complexities of working with K–12 students. By midyear, many first-year teachers may be questioning the effectiveness of their teacher education programs and wondering why all the courses they took didn't seem to prepare them fully for teaching. Yadav (2008) speaks to the "complex and

ill-structured nature of teaching” (p. 27) and the lack of teacher education content devoted to engaging candidates in reflection and decision making. Munby, Russell, and Martin (2001) agree that much of the content of teacher education programs is focused on increasing knowledge with little time spent integrating that knowledge with practice through a routine of critical reflection. Darling-Hammond (1994) suggests that teacher education programs should give more attention to the development of teachers’ capacities to make complex judgments based on knowledge of students and content.

Teaching is truly a decision-making profession. Knowing how to examine the value and effectiveness of one’s decisions, and their short- and long-term consequences, requires the ability to scrutinize and reflect critically. Perhaps helping candidates develop habits of reflectivity may do more than any other skill they learn in teacher education programs to help them succeed as teachers, to achieve greater student results, and to focus on teaching as a long-term career.

REFLECTION AND REFLECTIVITY

The concept of reflection is commonly credited to John Dewey. According to Dewey (1933), reflection involves “a state of doubt, hesitation, perplexity, or mental difficulty, in which thinking originates.” Dewey’s description of reflection as “an active, persistent and careful consideration of any belief or supposed form of knowledge” (p. 9) establishes a framework through which reflectivity can be examined (Birmingham, 2004; Smyth, 1989; Bullough, 1989; Butke, 2006; Williams, 2006). Dewey also recognized that it is the reflection on experiences that leads to learning. In promoting a theory of experiences, Dewey (1938) cautions that he is not talking about *any* experience because some experiences can be mis-educative, “arresting or distorting the growth of further experience” (p. 25). Dewey also examines concerns surrounding disconnected experiences and later states a major consideration is “with the *quality* of the experience which is had” (p. 27). Dewey’s point is echoed in Roth (1989): “Reflection must have a substantive basis” (p. 33).

Posner (2005) suggested that experience combined with reflection results in professional growth. Zeichner and Liston (1996) delineate five di-

mensions of reflection teachers engage in: (1) generic reflection (thinking about work and students), (2) academic reflection (thinking about content and instruction), (3) social efficiency reflection (thinking about improving methods of instruction), (4) developmentalist reflection (thinking about student readiness), and (5) social reconstructionist reflection (thinking about equity and social justice). Schön (1983) introduced the concept of a “reflective practitioner” who could both reflect-in-action (to reshape what you are working on while working on it) and reflect-on-action (to consider what has been done in order to evaluate one’s own process).

Killion and Todnem (1991) extended Schön’s concept by including reflection-for-action, the desired outcomes that guide our future actions. The function of reflection is “to formulate the relationships and continuities among elements of an experience, between that experience and other experiences, between that experience and the knowledge that one carries, and between that knowledge and the knowledge produced by thinkers other than oneself” (Rogers, 2002, p. 848).

Wang and King (2008) cite Meziro’s definition of reflectivity as an “awareness of a specific perception, meaning, behavior or habit” (p. 143) and define reflectivity as multidimensional in nature related to affective, discriminate, judgmental, conceptual, psychic, and theoretical domains. Van Manen (1977) suggests “that reflection occurs at three stages: ‘technical rationality’ (concerned with application of pedagogical knowledge); ‘practical action’ in which the teacher advances beyond the purely instrumental preoccupation with technical rationality, and is concerned with clarifying assumptions . . . underlying competing pedagogical goals, and the 3rd stage ‘critical reflection’ in that the teacher incorporates moral and ethical criteria into the discourse about practical actions” (pp. 39–40). At van Manen’s third stage of reflection, teachers ask questions regarding what supports or influences their students’ learning experience. Silcock (1994) acknowledges the affective and psychological components of reflectivity and cites Mead’s (1932) belief that “reflectivity is vital not only for cognitive restructuring but for composing an internal dialogue with one’s self . . . self-awareness and . . . self-control” (p. 276).

Bullough (1989) states that “reflectivity must become part of a coherent framework; a statement of philosophy and values” (p. 15). Bullough, like Dewey (1938), believes that we may be reflective about a problem “and yet embrace solutions that are ethically irresponsible given the values of

a society committed to realizing democracy” (p. 16). Birmingham (2004) also promotes the connection between values (virtue) and reflectivity. Both these researchers want the action accompanying reflectivity to be “grounded in a social ideal” (p. 16). This point parallels Dewey’s (1938) ideas about the value of community and society as a way to evaluate what we believe and how we act. Bullough believes the capacity for reflectivity is fostered over time, and reflectivity “needs to be couched in an articulated social vision, begin with something that is problematic and is inherently purposeful” (p. 17).

All forms of reflectivity require cognitive thought. Schön (1983) established connections between experience and constructivism stating “that reflecting practitioners use a constructivist decision-making perspective while non-reflecting educators use an instrumental problem-solving approach” (Ferry and Ross-Gordon, 1998, p. 98). Schön’s theory that reflection-in-action evolves from experience supports Dewey’s (1938) views regarding the importance of experience as foundational to reflectivity.

Parsons and Stephenson (2005) state that “students [preservice candidates] have to be aware of and able to monitor their own thinking, understanding, and knowledge about teaching to be a reflective practitioner” (p. 97). This point reinforces Mead’s (1932) belief regarding the “self” nature of reflectivity (Silcock, 1994). In summary, reflectivity is a purposeful activity fostered over time that requires awareness of self and self-perception, is developmental and occurs in stages, and is based in experience that connects to other meaningful experiences.

DEVELOPING REFLECTIVITY

Brookfield (1990) identified four activities central to reflectivity: (1) assumption analysis, (2) contextual awareness, (3) imaginative speculation, and (4) reflective skepticism. Through *assumption analysis*, candidates are asked to challenge their beliefs, values, cultural practices, and social structure in order to assess the impact of these assumptions on daily practice. Teachers must constantly rearrange and integrate new ideas and new experiences into their commonly held ideas. Examining these ideas is the first step in critical reflection.

During the development of *contextual awareness* candidates come to recognize the ways assumptions are socially and personally created in a specific historical and cultural context. The cultural context of candidates who are completing undergraduate work in small, Midwestern settings will necessarily undergo some dramatic shifts as they accept teaching positions in large, urban settings. Being able to identify the influence their past experiences might have on their assumptions about their students will help them transition into diverse positions.

Through *imaginative speculation*, candidates begin to consider alternative ways to reflect on phenomena in order to see opportunities that will challenge their established ways of knowing and acting. Rather than blaming some outside source for a disruptive classroom, the teacher begins to think about what effect changing his or her personal behavior might have on the behavior of the students in the classroom. Through imaginative speculation, teachers begin to step outside of their long-held assumptions and consider the value in approaches other than the ones they've always followed to solve problems.

The activity of *reflective skepticism* puts the candidate or teacher in the position of examining a subject so that the available evidence from that subject's field is suspended or temporarily rejected in order to establish the truth or viability of a proposition or action. A teacher might wonder what would make students become a more cohesive group. This could lead to thinking about what makes the teacher feel like a member of a community, then thinking about the cultural context of the students, and finally to thinking about what type of learning community the students would desire and how they might all work together to become one.

Brookfield (1990) also links these four activities to a series of questions: (1) describing (What do I do?), (2) informing (What does this mean?), (3) confronting (How did I come to be like this?), and (4) reconstructing (How might I do things differently?). Schön's "reflection-in-action process includes recognition of the problem, recognition of incongruities, evidence or reframing the problem, generation of new solutions, testing in action of solutions, and evaluation of outcomes" (p. 102) that seems to align with Dewey's (1933) five steps of thinking or problem-solving and Brookfield's four activities central to reflectivity.

Further, a minimum of three obstructions appear to impact one's ability to reflect and engage in reflective practice. The first one is cognitive in

nature. The complexity of classrooms makes it very challenging for novice teachers with limited experiences to reflect on the numerous classroom events in a given day and sufficiently address various aspects of instruction including social, moral, and ethical issues. The second is the lack of structured opportunities (activities) to stimulate reflection. The third is that the structured opportunities are inefficient so the required amount of time impedes the prospect for growth.

CONDITIONS FOR REFLECTIVITY

First, engaging individuals in reflection requires experiences that are of sufficient quality to promote reflection (Dewey, 1938; Roth, 1989). Reflection is tied directly to experience. Second, individuals must have the cognitive ability to practice reflection. They must have self-awareness as well as awareness of their environment. Williams (2006) suggests “self-reflection serves as a way of constructing a sense of self vis-à-vis interacting with the environment” (p. 1). They must psychologically, cognitively, and/or emotionally benefit from reflective activity. This benefit may be to solve a problem or address an issue, or it may be to reduce confusion or frustration. Reflectivity is often a problem- or situation-based activity. Reflection typically is perceived as an avenue to deepen understanding of self, situations, or perspectives. Ideally, the process of reflection becomes habit of mind (Birmingham, 2004). Third, reflective thinking is stimulated by environmental conditions that allow individuals to focus, to experiment, and to feel safe from negative or uncomfortable influences.

Teacher reflection is connected to the nature of experience and one’s interest in acquiring a deeper understanding of an event, problem, or situation. Wang and King (2008) cite Meziro’s perspective “that reflectivity is an awareness of a specific perception, meaning, behavior or habit” (p. 143). Reflectivity may be stimulated by positive or negative interactions or responses. It may result in feelings of pleasure and self-satisfaction, or it may result from cognitive dissonance or intolerance of ambiguity.

Reflectivity is action based and, according to Birmingham (2004), it is action tied to moral virtue, suggesting that moral virtue is at the heart of reflection. Pultorak (1996) recognizes that reflectivity is somewhat developmental and the degree to which one may be reflective depends

largely on the experience, what connects to that experience, and the psychological, emotional, or intellectual need to arrive at a deeper or clearer understanding of a process or phenomenon. Therefore, certain conditions appear to exist that promote or stimulate reflectivity.

TEACHING REFLECTIVITY

The literature provides teacher educators with several methods, activities, and practices that attempt to stimulate and foster teacher reflectivity. These activities are designed to engage learners through constructivism and collaboration. A detailed description of some written and verbal activities designed to stimulate reflectivity are offered here to emphasize ways that common practices in teacher education programs can foster reflectivity in teacher education candidates.

Written products include *reflective journals* (Burton and Seidl, 2005; Pultorak, 1996; Spalding and Wilson, 2002), *professional portfolios* (Bullock and Hawk, 2005; Lunenberg, Korthagen, and Swennen, 2007; Orland-Barak, 2005), *case study analysis* (Richert, 1990), *reflection prompts* (Lipton and Wellman, 2003), *SWOT sheets* (Noble and Henderson, 2008), and *computer-mediated communication* (Greene, 2008). Verbal analyses activities that have been implemented to stimulate reflection include *pre- and post-observation conferences* (Korthagen and Vasalos, 2005; O'Donoghue and Brooker, 1996; Siens and Ebmeier, 1996; Spalding and Wilson, 2002; Tsangaridou and O'Sullivan, 1994); *interviews* (Lee, 2005), *visually aided feedback* (Crasborn, Hennissen, Brouwer, Korthagen, and Bergen, 2008; King, 2008), and *classroom discussions including peer-generated feedback* (Amobi, 2005; King, 2008). Written and verbal reflective practices are opportunities for the personal and professional development of novice and experienced teachers.

Reflective Journals

Reflection through writing can be structured in a variety of ways. Pultorak (1996) describes 3 procedures for reflective writing. Procedure 1 is to encourage reflectivity over a short period of time by identifying an important event over the previous two days of classroom instruction and then

spending a few written paragraphs reflecting about that event. Procedure 2 has novice teachers reflect in writing every two weeks by first reading their bidaily reflections to determine any common problems and trends in these reflections before completing a written reflection that includes a self-analysis section to help determine possible solutions to classroom difficulties. The primary purpose of procedure 2 is to engage individuals in a more long-term reflection and analysis. Procedure 3 engaged novice teachers in reflection through writing on specific classroom events they observed outside of their assigned setting. Each written reflection included 4 parts: purpose, success of event, important conditions to the outcome, and moral or ethical issues.

Portfolios

Professional portfolios vary from online documents (LiveText, Task Stream, etc.) to 3-ring binder folios. More often than not portfolios are compiled electronically and stored on flash drives for easy access and review. Portfolios are designed to encourage novice teachers to reflect about important areas such as state and/or national teaching standards and to document evidence of their knowledge and experience of each. Portfolios can be developed over the course of an entire teacher education program to demonstrate growth in knowledge and skill and can provide evidence of achievements.

Orland-Barak (2005) points out that portfolios can promote reflective thinking at various levels of deliberation on practical teaching matters as well as at higher levels of questioning institutional goals. The routine of reflecting on practice through portfolios can provide the novice teacher with a cognitive link between past experiences and newly encountered challenges. Discovering ways to understand present circumstances through previously acquired knowledge can help to generate new problem-solving abilities.

Case Study Analysis

Case study analysis can be a valuable method for stimulating teacher reflection. Teaching through case study requires preservice teachers to review unique and challenging situations and to reflect on potential solutions.

Case studies can present complex situations that require difficult analysis and depend on both instructor expertise and high levels of student comprehension. Case study written reflections could be shared and discussed with peers in an effort to learn about alternative ways of approaching problems.

Reflective Prompts

Reflective prompts stimulate reflection as it relates to a given word, phrase, question, or similar reflection starter. For example, Noble and Henderson (2008) describe the implementation of a SWOT sheet (Strengths, Weaknesses, Opportunities, Threats) as a method of fostering reflection before beginning a teaching experience. Individuals identify what they believe are the key Strengths, acknowledge current Weaknesses, strategize potential Opportunities to build on strengths and improve weaknesses (e.g., workshops), and discuss Threats or concerns they have as a new teacher. In the situation where a mentor teacher is assigned to the novice teacher, the mentor also completes a SWOT sheet and information is collaboratively shared.

Lipton and Wellman (2003) go a step further by providing reflective prompts in the form of stems to be completed at various stages of the first year of teaching. For example, at the beginning of the year individuals are provided reflective prompts such as, “During this year, I am looking forward to . . . ,” “Anticipating this year, I am most concerned about . . . ,” and at the end of the year, “The most important lesson I’ve learned this year is . . . ,” “In thinking about school goals and projects, I need to know more about . . .” (Lipton and Wellmen, 2003, pp. 118, 127). As illustrated, reflective prompts provide novice teachers with the opportunity to reflect regarding very specific items.

Reflective Responses to Readings

The purpose of responding to readings is for students to capture meaning and understanding from a text. In their response, teacher education candidates are to demonstrate their understanding of the text as well as interpret key concepts. The reflective response is supported with explanations and evidence from the text as well as ideas and practices from the teacher’s own personal experience. The teacher education candidate

must also provide an example of how information in the text might relate to him/her as an educator. Responding to readings in a structured manner encourages the reader to connect to the text and reflect on the relationship information in the text has to his/her own personal knowledge base.

Computer-Mediated Communication

Another form of written product is “computer-mediated communication” (Greene, 2008, p. 2). Computer-mediated communication has appeared with technological advancements and encourages preservice teachers to reflect online through such forms as chat rooms and threaded discussion with peers, classroom teachers, and teacher education professors. These online interactions stimulate teacher reflection, in many cases, with others as it relates directly to personal classroom challenges.

When thoughts, concerns, and opinions are shared through computer-mediated communication, personal assumptions and knowledge bases are often examined by “knowledge produced by thinkers other than oneself” (Rogers, 2002, p. 848). Such online reflections can vary from structured reflections to more common open-ended dialoguing. Levinson and Neumann (2008) also suggest that at least 3 conditions be addressed before implementing online platforms: (1) sufficient time for participants to contribute is provided; (2) commitment from all individuals to contribute is secured; and (3) proper online etiquette is determined and followed.

Pre- and Post-Observation Conferences

As part of pre- and post-observation conferences, novice teachers participate in a set of verbal reflective questions before and/or after a classroom observation. Questions as part of the preconference common to clinical supervision models might include: (1) What special student characteristics should be noted? (2) What did you teach in the content prior to the observed lesson? (3) What do you expect students to know as result of your lesson? (4) What will you do to determine if students achieved your objectives? Responses to these questions provide the observers with information about the lesson to be taught as well as a better understanding

of the novice teacher's level of preparedness. Responding to these questions also provides the teacher with a framework for reflecting on action.

Regarding postconferences, Pultorak (1996) reported that questions similar to those that follow solicited responses related to all three categories of van Manen's (1977) conception of reflectivity and that reflection appears to be a developmental process. For example, questions that typically solicited responses similar to level 1, technical rationality, were, "What were essential strengths of the lesson?" and "What, if anything, would you change about the lesson?" while questions that generally solicited responses similar to level 3, critical reflection, included, "How would you justify the importance of the content covered to a parent, administrator, and/or student?" and "Did any moral or ethical concerns occur as a result of the lesson?" (Pultorak, 1996, p. 285).

In an additional study investigating levels of reflection, Korthagen and Vasalos (2005) suggest the following questions be concretized and then asked during postconferences. Questions such as, "What did you/the pupils want?," "What did you/the pupils do?," "What were you/the pupils thinking?," "How did you/the pupils feel?" could be focused as, for one example, "How do you think the pupils felt when you asked that question?" (p. 50). Both sets of questions encourage novice teachers to reflect about their classroom teaching.

Interviews

Somewhat similar to clinical conferences, interviews can stimulate teacher reflectivity. Interviews differ in that verbal questions are typically related to more than an instructional lesson. For instance, Lee (2005) analyzed reflective data as the result of initial interviews (before fieldwork) and exit interviews (after fieldwork) to assess teacher reflection of preservice teachers in terms of content, depth, and development. During initial interviews, preservice teachers were verbally asked questions related to their memory of learning as a student, perceptions of good teaching, program goals, past classroom experiences, and fieldwork expectations (Lee 2005). When exit interviews were conducted, preservice teachers were asked about their overall field experience, new perceptions about good teaching, interest in becoming a teacher, and future goals. The researcher

concluded that the content and the pace at which thinking deepens depend on such items as personal background, field experience context, and level of experience (Lee 2005).

Visually Aided Feedback

Visually aided feedback uses a video recording of a lesson or other educational event followed by the novice teachers' analysis of the recording. The verbal discussion of the event is designed to promote and stimulate reflective thought and help individuals determine how future instruction might be improved. King (2008) concluded that "visual feedback may have been the impetus to move beyond novice reflections to intermediate reflections" and that "preservice teachers overwhelmingly felt that a visual record of their teaching inspired them to reflect more critically" (p. 29). It appears in this case that novice teachers found this method of fostering teacher reflectivity valuable.

Peer Observations

Classroom discussion of peer observations is a powerful verbal analysis activity. This occurs when classroom instruction is designed to specifically foster and stimulate teacher reflection. An example is peer-generated feedback. For instance, a novice teacher delivers a minilesson to his/her colleagues simulating classroom students and then, after the lesson, feedback from colleagues is verbally shared as a means to stimulate teacher reflection. This verbal interaction is typically led by an individual with a predetermined set of questions. King (2008), in studying the effects of peer-generated feedback on critical reflection, concluded that, "The teacher receives an alternate perspective of their teaching and peer observers have opportunity to connect theory to practice in a live context" (p. 28).

REFLECTIVITY IN TEACHER DEVELOPMENT

To understand differences between experienced and novice teachers' development, Ferry and Ross-Gordon (1998) compare experienced expert

teachers with novices who are “rule driven, slow-paced, non-contextual and highly influenced by observable acts” (p. 101). The researchers conclude that their findings “seem to indicate that reflecting-in-action has become an unconscious response for reflective practitioners to problematic situations” (p. 111). This information may be helpful in understanding why novice teachers are not yet capable of reflecting as deeply as more experienced peers.

Bullough (1989) cites Berliner (1988) who suggested that “in and of itself, reflectivity is not necessarily a sufficient or even a trustworthy aim for preservice education” (p. 15). If this is the case, it may be easier to understand why deeply rooted reflective practices are absent in novice teachers’ toolkits. Butke (2006) uses constructive dialogues to deconstruct rehearsals based on research to support using feedback as a way to stimulate reflection. Butke adds “reflection-fore-action” to Schön’s two concepts, “reflection-on-action” and “reflection-in-action.” This third category incorporates a broader conceptual framework and “incorporates all possibility of reflection that transpire before a teaching episode occurs” (p. 64).

Butke’s idea of reflection-fore-action may help us understand why novice teachers have trouble being reflective. Their tacit knowledge about teaching is undeveloped, so they lack the experiential knowledge to “reflect-fore-action.” They may be far too focused on rules, lesson plan protocols, and curricular guides. At best, they reside in van Manen’s (1977) “technical rationality” stage that limits them “to concerns with the application of pedagogical knowledge” (Ferguson, 1989, pp. 39–40). Parsons and Stephenson (2005) also discuss lesson planning that seems to accommodate Butke’s “reflection-fore-action” and suggest that the solitary nature of teaching may influence how teachers reflect on their practice. The isolation does not promote the idea of community/shared discourse that may be important in shaping reflective practice.

Ross and Hannay (1986) examine reflective inquiry that has influenced teaching social studies, but question whether “reflective inquiry has been translated into educational practice?” (p. 9). The authors call for a critical discourse that “requires that the unexamined practices and beliefs of teachers and students be subjected to scrutiny and a continual process of revision” (p. 13). They are interested in an emphasis on analytical understanding instead of technical proficiency.

WAYS REFLECTIVITY INFLUENCES LEARNERS

Much of the research on reflective practice helps to address this discussion. Whitehead's (1929) view is that "education is the guidance of individuals towards a comprehension of the art of life" (p. 39). Reflectivity is one way that individuals understand themselves, others, and their world. Dewey (1938) believes that "all human experience is ultimately social: that it involves contact and communication" (p. 38). Reflectivity shapes learners by giving them opportunities to share in a social environment and communicate ideas, beliefs, and perspectives. Dewey states, "Every genuine experience has an active side that changes in some degree to objective conditions under which experiences are had" (p. 39). Reflectivity builds on an individual's capacity to analyze and examine experience as it shapes and reshapes one's world view. Ferry and Ross-Gordon (1998) caution that "expertise does not seem to reside in merely gaining experience, but in how the individual uses experience as a learning mechanism" (p. 107).

Bruner (1960) explores the nature of intuition as an important cognitive characteristic. Intuition is defined as "immediate apprehension or cognition" (p. 60). While recognizing that "intuitive thinking, the training of hunches, is a much-neglected and essential feature of productive thinking . . . in everyday life" (pp. 13–14), Bruner is dismayed that intuitive thought and process are de-valued. Reflectivity, especially as problem- or situation-solving, may be highly dependent on intuition and may influence learners to be risk takers, to think in multiple contexts, and to experiment. This type of reflectivity is important to stimulate a variety of solutions or understandings. Bruner (1966) also believes that the nature of instruction should "specify the experiences that most effectively implant in the individual a pre-disposition toward learning" (p. 40). This point may be among the most significant ways that reflectivity influences learners: becoming a habit of mind that provides an automatic avenue for deepening awareness and understanding.

Ultimately, reflectivity influences learners by providing a framework for gaining answers to questions, solutions to problems, and satisfaction in inquiry. Student-regulated learning (Baggetun and Wasson, 2006) and self-directed learning (Lunenburg and Korthagen, 2005) are effective ways to build student capacity for reflection. These approaches promote

self-confidence and self-assurance. Williams (2006) reports on studies that reflect that middle school students have low self-esteem and that self-reflection based on social cognitive theory would “give them tools not only to set academic goals, but also to accomplish them.” (p. 4).

Success in academic achievement leads toward learner autonomy in that it becomes foundational to understand one’s world and one’s place in that world. Reflectivity and reflective practice are powerful tools to deconstruct one’s thinking and perceptions. Kaminski (2003) cites Richards, Gipe, Levitov, and Speaker (1989) who suggest that reflection is “a metacognitive skill—one being a way of what one knows . . . to relate, evaluate, regulate and act upon one’s own cognitive process” (p. 21). Reflectivity influences learners to become successful learners through reflection, to analyze conditions, ideas and viewpoints, and to draw appropriate conclusions. It serves as a psychological and intellectual conduit for knowledge and understanding.

CONCLUSIONS

In order to make teachers and teacher education candidates more aware of the influence reflectivity can have on learning, and to help them develop habits of reflectivity, teacher education programs must adapt to real-world circumstances. Ornstein and Hunkins (2009) suggest that there is a need to reinvent schools rather than reform them, that productive thinking about education does not revolve solely around procedural and technological change. Conceptual and cultural change is called for. Perhaps the way teacher education programs are structured does not adequately prepare professionals for the rapidly changing contexts they will encounter as they become classroom teachers. The time has come for teacher education programs across the nation to acknowledge their share of responsibility for teacher turnover and to incorporate changes in course and program requirements that will give teacher education candidates the opportunity to become problem solvers and engage in critical reflection.

Teachers must also be adequately prepared to affect change in schooling as well as their chosen profession. They need to not only “know” but to do, and to imagine and meet intellectual challenges through reflectivity.

Teacher educators must prepare their candidates to thrive in all manner of classrooms. Once teachers have the opportunity to flourish, they will be better prepared to help their students do likewise.

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Reflection as a Social Problem-Solving Process

Sunya T. Collier

ABSTRACT

This chapter describes a study designed to examine the reflective process of four preservice teachers as they seek to optimize learning in the elementary classroom. The author proposes that the social nature of reflective thought is especially constructive in the development of teachers who can consider why they make specific instructional choices and how that is related to learning. Qualitative methods were used to examine individual and social reflective data sources including written reflections, individual interviews, and focus-group interviews. Ongoing analysis led to six assertions addressing the value of the reflective process and the content of preservice teachers' thoughts. Ultimately, inquiry, experimentation, and social dialogue appear to be necessary at the preservice level to underscore and develop the skills of a reflective practitioner.

An empowered teacher is a reflective decision maker who finds joy in learning and in investigating the teaching/learning process—one who views learning as construction and teaching as a facilitating process to enhance and enrich development. (Fosnot, 1989, p. xi)

INTRODUCTION

Over the last three decades, teacher education programs have moved from competency-based training models to programs that focus primarily on the development of reflective practitioners (Clift, Houston, and Pugach, 1990; Sikula, Buttery, and Guyton, 1996). This shift is manifested in many approaches including the relative importance placed on understanding teacher thought (Shulman, 1986, 1987); underscoring the close observation and study of students (Duckworth, 1987; Rodgers, 2002); emphasizing the personal dimension of teacher as researcher (Cochran-Smith and Lytle, 1993, 1999) and establishing the teacher as an individual decision maker and problem solver (Dewey, 1933).

The study described in this chapter intersects these traditions, adding to our collective understanding of the benefits of encouraging teacher reflectivity and extending it to emphasize the often overlooked social component of reflective thought. Motivated by what preservice teachers reflect on (content), as well as, how they reflect (process), I underscore the social nature of reflection as an inherent means of encouraging teachers to more clearly see their own theories of teaching and learning. The point was not to simply create “opportunities for reflection” but to also challenge prospective teachers to consider why they make specific instructional choices and how that is related to learning. Therefore, this study was designed to examine the reflective process through which the participants came to new understandings about how children learn.

REVIEW OF RESEARCH

The Content of Reflection

Reflection is widely considered a primary means through which preservice teachers evolve into more effective decision makers. Historically, much of the application of reflection in teacher education programs has been based on preservice teachers’ opportunities to learn about the “practice” of teaching (i.e., what to teach and how to teach), often to the exclusion of how those practices are informed by what is known about how children learn (i.e., why certain instructional choices are made)

(Cruickshank, 1987; Meyers and Collier, 2000; Pultorak, 1996; Ross, 1989, 1990). The emphasis has been on what teachers do and how they do it (Shulman, 1986, 1987; Zeichner and Tabachnick, 1991). Typically, research on reflection does not focus on preservice teachers' knowledge or understanding of children or the reciprocity between theory and practice.

Recent research conducted with *in-service* teachers is beginning to take into account the learner as the focus of reflective thought. For example, Marble, Finley, and Ferguson (2000) studied how in-service teachers think about their practice and found that over the course of one year, teachers began to move away from discussion about instructional problems to thinking first about the learner. There is, however, less research in this area with preservice teachers.

This study is uniquely situated to reveal how reflection can help develop *preservice* teachers' theories about how children learn and, therefore, what instruction could look like in their future classrooms. The content of reflection was not on what to teach and how but rather on why certain instructional choices are made and how that is connected to student learning. The focus was not on the teachers' view of self but on the teachers' view of the learner. It was more about preservice teachers seeing student learning and less about the deficiency of their instructional approach. My hope was that reflective habits could be formed at the beginning stages of learning to teach so they were in place through the transition into and during the challenges of everyday full-time teaching.

The Process of Reflection

Reflection in teacher education research has been first and foremost viewed as an individual, private activity earmarked by "written reflection." Often this takes the form of journal entries (Bain, Ballantyne, Packer, and Mills, 1999; Colton and Sparks-Langer, 1993; Davis, 2006), field experience logs (Francis, Tyson, and Wilder, 1999), self-study papers (Freese, 2006), or portfolio documentation (Orland-Barak, 2005). For example, Amobi's 2003 study helped secondary and special education preservice teachers begin to examine their beliefs through a survey of educational beliefs. Reflective journals were analyzed to discover how preservice teachers describe multiple aspects of teaching. The surveys were then used to stimulate preservice teacher thought on the purpose

of education. This is one of the many studies interpreting reflection as a private act.

In the last few years, researchers have begun to highlight the social component of reflective practice (e.g., Cochran-Smith and Lytle, 1999). One particularly pertinent illustration is Carol Rodgers's 2002 reflective cycle that draws on Dewey's work. In her article, Rodgers described how she helped *in-service* teachers slow down, attend to, and respond intelligently to student learning. She proposed that supportive reflective communities can help teachers distinguish their teaching from the students' learning. Rodgers's study not only points to the value of social reflection but also highlights the importance of examining teachers' theories to practice knowledge. I reasoned that studying preservice teachers in a social problem-solving community was crucial to understanding their awareness of their reflections and their ability to deliberately respond to students.

There is a body of research that points to dialogue as a key factor. Several models that highlight the importance of face-to-face conversation in teacher development include, for example, learning communities (Cochran-Smith and Lytle, 1999), cognitive coaching (Costa and Garmston, 2002), reflective dialogues (Moyles, Adams, and Musgrove, 2002) and collaborative dialogue (Lee and Barnett, 1994). However, the traditional concept of dialogue as spoken conversation has been reframed to include written thought. This is illustrated by dialogue journals (Freese, 2006) and computer-mediated communication (Rhine and Bryant, 2007; Greene, 2008) where talk and sharing are processed through technology as a tool of communication. In this context, communication no longer occurs in a shared physical space and is less likely to lead to individual inquiry and experimentation.

THEORETICAL FRAMEWORK

Reflection as Inquiry: A Process of Problem Solving

Following Dewey, reflection is defined for the purposes of this study as a process of inquiry that encourages an understanding of the interactive nature of theory and practice (Dewey, 1933). Core to this work is the idea that reflection has an often overlooked social component. It is a cycle of inquiry that attempts to transform a problematic situation into a clear,

coherent one (Campbell, 1995). And because, for Dewey, all experience is a problem-solving process, the best approach to progress of thought is a method of inquiry that allows teachers to assess their ideas and actions.

For this study, preservice teachers engaged in the process of inquiry to solve the problem of how elementary schoolchildren learn. For example, the perplexity came in the form of a question: Why will I (preservice teacher) choose to teach a certain way? This question was then formed into a problem that seemed manageable: "How do I think children learn, and how does that inform the way I plan to teach?" Next, preservice teachers hypothesized or set up a plan: They designed a learning activity to catch children thinking. Then they tried it out: They implemented their learning activities. They described, observed, and evaluated the children's learning process through individual and social reflection on videotape of the learning activity. Then they drew conclusions that seemed most plausible until new events challenged their appropriateness and they retaught their learning activity.

Through this process, preservice teachers had opportunities to recognize their own assumptions; articulate their theories; leave them open for discussion; and, little by little, determine what they needed to pay attention to in order to catch children thinking. In addition, they evaluated which interactions seemed to be helping children learn the best and what needed to be altered about the learning activity in order to get a peek into a child's mind.

Reflection as Experimentation: A Process of Reconstructing Meaning

Reflection, then, is not a goal per se, but rather a recursive means-end process that mediates thought and action. It occurs in both the private and the public realm and is manifested in the individual through persistent engagement with meaningful learning opportunities. For Dewey, the very process of school is the practice of forming one's own ends, reflecting on them, interacting with others' viewpoints about them, and finally assessing them in terms of consequences (Doll, 1973). Ends are developed in connection with means.

In examining this process of reflection, Dewey recognized that the real end of the process is continual development of the habits of reflective

inquiry (Dewey, 1957). In contrast to routine action, reflective action thus requires deliberate and persistent thought. For Dewey (1933), it is an honest, thoughtful, open-minded effort to examine experience by exercising what Yinger (1990) calls an ongoing conversation of practice. Fieman-Nemser (1990) argues that reflection should be seen as a professional disposition and Ramsey (2003) describes reflection as an attitude combining the desire to consider many points of view, a sincere interest in a cause, and seeking to understand what is learned (p. 125). Ultimately, it becomes a habit, a way of viewing life (Larrivee, 2000); a habit that must be formed during preservice teacher training in order that it may be fully realized in the daily instructional choices of the in-service teacher (Collier and Meyers, 2003).

Reflection as Social Experience: A Function of Conversation and Community

Much of the literature on reflective thought and teaching emphasizes how the process of reflection (the relationship of ideas to action) is articulated in an individual way (Larrivee, 2000; Ross, 1990; Schön, 1983; Willard-Holt and Bottomley, 2000). This orientation highlights reflection as a private activity that relies upon the power of ideas to direct action. While this is an inherent facet of reflective thinking, it represents only one form of reflective experience.

There is no call for holding that experience is exclusively individual, private, or subjective (Bernstein, 1966, p. 65); rather, every experience is an interaction (Dewey, 1939). Therefore, reflective thinking must also include a collective, social, or objective component. It must be promoted in a community of teachers, scholars, and students where individuals are encouraged to communicate, inquire, and construct values and knowledge (Noddings, 1995; Norlander-Case, Reagan, and Case, 1999). Sharing thoughts extends our internal conversations and allows the external reflective voice to emerge. In experiences where reflection includes an inherently social nature, talk, public reasoning, and shared problem solving all play a vital role (Leinhardt, 1992).

The critical component in this case is conversation. Building reflective habits through dialogue helps individual thinkers broaden their understanding of others and, through this, broaden their understanding of them-

selves (Campbell, 1995; Costa and Kallick, 2000; Noddings, 1986). In other words, we become familiar with ourselves through social discourse. By voicing and justifying thoughts within a group of inquirers, we attempt to make personal understandings explicit and, through a process of public questioning, develop more sophisticated and defensible ideas. In fact, our actions, chosen in response to reflections, are more defensible in part because we have grappled with personal understanding through public exchange and examination (Fernandez-Balboa and Marshall, 1994).

Furthermore, for interaction to result in community there must be shared action or cooperation on the part of the individuals to address achievement of goals that are common to all (Campbell, 1995, p. 174), that is, how best to foster genuine learning for each child. In this sense, the process of reflection includes how we as individuals need social process to challenge our assumptions and beliefs and how we, in turn, may shape corporate ideas and actions.

Purpose

The purpose of this study was to examine the reflective process through which preservice teachers came to new understandings about how children learn. It was aimed at helping teacher educators better understand how to prepare more thoughtful and reflective teachers. My intent was to augment the collective record about the content of preservice teachers' thought and to contribute to the research on the social practice of reflective thought.

In a sense, this project was a study within a study. While the preservice teachers attempted to develop their understanding of how elementary school children learn, I examined the reflective process whereby the participants came to their understanding. The research was guided by one overarching research question and two secondary questions. The primary research question was: What value does the *process* of individual reflection (e.g., private journal) and/or social reflection (e.g., individual interviews and focus-group interviews) have for elementary preservice teachers in this study? The secondary research questions were: (1) How do these reflections *develop* elementary preservice teachers' theories regarding how elementary children learn and, therefore, what should instruction look like in their future classrooms? and, (2) How do these

reflections encourage elementary preservice teachers to *bridge* the theory-practice relationship?

METHODS

Context

The context for the study was an undergraduate elementary teacher education program at a major university in the southeastern part of the United States. The participants were enrolled in a Foundations of Education course (history, philosophy, and sociology) and had a simultaneous weekly field placement in a K–5 classroom. By design, this unique combination of content and practical experience encouraged participants to build a bridge between personal theory and practice over the course of the semester.

The primary objective of foundational studies is to help hone students' abilities to examine and explain educational issues and to develop a sense of educational responsibility. If we believe a reflective disposition is an integral component of teacher life, then it is worthwhile to consider the fundamental role that the Foundations of Education course could play in the preparation of reflective practitioners. Through educational foundations courses, prospective teachers begin to see a context for reflective comparison and interpretation of models that lead to the construction of a personal orientation to teaching and learning. Integral to the foundations' context is the idea that the meaning of action is socially, historically, and philosophically constructed and cannot be understood apart from self-reflection. It is, therefore, well suited to the development of a reflective disposition in beginning teachers.

It is widely accepted that educational foundations have the unique role in teacher education of complementing professional literacy. Students in this Foundations of Education course had in-depth opportunities to examine how theories of human nature support distinct visions of the aims, content, and methods of education. In order to do this effectively, it was necessary that students participate in a practicum experience (Reagan, 1993; Norlander-Case, Reagan, and Case, 1999). While preservice teachers were practice teaching, they designed and implemented a learning activity where children exercise their problem-solving strategies. By

reflecting in, on, and through this experience, preservice teachers could acknowledge and assess their existing theories about how children learn, evaluating them in relationship to how they should approach instruction.

Framework

In this qualitative inquiry, I used a phenomenological approach to examine the reflective process preservice teachers use to develop personal theories of learning and teaching (Patton, 1990). The uniqueness of individuals and the dynamic processes that occur within the social context of the setting allowed a holistic look at the “meaning perspectives” that were brought to everyday life by the participants.

The social constructivist conception of reflective practice adopted by Liston and Zeichner (1991) capitalizes on Dewey’s work. Their work proposes that the aim of teacher education should include the development of prospective teachers who can identify and articulate their purposes, who can make informed instructional choices, who understand the social and cognitive disposition of their students, and who can discuss their actions. From this perspective, preservice teachers learn not to base their actions on tacit beliefs about the child’s mind but rather to acknowledge personal theories and then examine them in relationship to systematic interactions with children.

Following the social constructivist tradition of learning grounded in Fosnot (1989), Liston and Zeichner (1991), von Glasersfeld (1989), Vygotsky (1978), and originally Dewey (1933), this study integrated four essential ideas: (1) that theory develops in the context of practice, (2) that reflection is a recursive means-end process that mediates thought (theory) and action (practice), (3) that reflection is a democratic process where ideas are voiced and evaluated in an open forum, and (4) that reflection is a communal activity.

Participants

The four participants in this study represented a purposive sample of education majors who had experience with reflective activities in previous undergraduate education courses (Patton, 1990). All of the participants were Caucasian females ranging in age from 21 to 31. Three participants

were juniors and one was a senior. Using reputational case selection (LeCompte and Preissle, 1993) and the intensity sampling approach (Patton, 1990), demonstration of insightful, inquisitive, or reflective tendencies as displayed in a Foundations of Education class were considered essential. All participants reported having completed reflective journals, projects, or papers in content area classes one semester before the commencement of the study. None, however, had been given any opportunity to reflect on their own presuppositions about learning or to relate this knowledge to decisions regarding instruction.

Data Sources

Data collection sources included individual interviews, focus-group interviews, individual written reflections, and the researcher journal. The data-collection process occurred over the course of eight consecutive weeks in one spring semester of the teacher education program.

Individual Interview

As part of the study, the participants designed and implemented learning activities for elementary children in a particular grade (K–5). The following is an illustrative example of the participant designed learning activities.

Elaine's learning activity was designed to help a group of four fifth-grade students explore the concept of volume. To introduce the activity, Elaine presented an experiment in which the students collectively measured two similar containers.

I did a little experiment with the measuring cups and rice. I had two different plastic storage containers. One held two and one half cups and one held two cups. I got them to speculate which one they thought would hold the most. We tested it and passed it around and they all decided which one held "the most." Next, I asked each student to create a "box that will hold the most" using a flat sheet of graph paper, scissors and tape. I wanted each of them to come up with a strategy of creating a box that would hold the largest volume. I wanted to see what they were thinking since they knew very little about volume.

Each learning activity was videotaped and then observed and critiqued during a 1 hour 30 minute individual interview. As an instrument of reflection, the videotape facilitated collaborative dialogue about what participants were thinking at critical moments in the learning activity. Preservice teachers discussed why they chose the particular learning activity, their descriptions of what took place, what it revealed to them about how children learn, how the interaction with children influenced their beliefs about how kids learn, and, if they did it again, what they would change and why. In each instance, they chose to redesign the original activity and reimplement it two, three, or even four more times to gain insight into children's ways of thinking. Each time, video of the events was collaboratively discussed during an interview as a means of refining understanding. On average, 12 hours of transcripts were analyzed for each participant.

Focus-Group Interviews

In addition to individual interviews, all preservice teachers gathered each week during the field placement for a one hour focus-group interview. Ten hours of transcripts were analyzed. The interviews provided a supportive setting where, at least potentially, individual beliefs could be voiced and examined through social exchange. Each week, one videotaped learning activity was randomly selected as a focal point of discussion. I guided conversation through key questions, points of interest shared by the participants, and concepts generated from written reflections. Together, the preservice teachers confronted, compared, and constructed what their understandings were about how children learn and how instructional decisions must reflect that knowledge. The dialogue was grounded in the participants' thoughts about learning in relationship to experience and theory and helped participants confirm meaningful lesson ideas.

Individual Written Reflections

Another data collection tool used in this study was written reflections. Preservice teachers were given four series of questions to which they responded throughout the study. The first reflective focus was on personal learning experiences; the second, third, and fourth respectively, included

metaphors for learning, thoughts about how children learn best, and the importance of reflection.

Researcher Journal

In addition to the data bank created using individual interviews, focus-group interviews and individual written reflections, I kept a reflective journal throughout the course of the study. The journal was not only another means of attempting to capture descriptions of the thoughts, actions, and interactions of the participants but also was a narrative of my thoughts and insights about specific conversations. Regular reflective entries were written after each individual interview and each focus group session.

Data Analysis

Inductive analysis brought order, structure, and meaning to strategically collected data (Marshall and Rossman, 1995). Preliminary data organization occurred as I wrote reflective research journal notes. Written reflections and interview transcriptions were read and reread, and simple units of meaning (e.g., words or phrases) were highlighted and then coded in the margin to represent the topic or theme in the text. The coded data were then organized onto a chart and reconfigured until they converged into final pattern categories (Bogdan and Biklen, 1992; Erickson, 1986; Patton, 1990). In doing so, data were distilled down to the most salient categories of meaning (Marshall and Rossman). I ensured trustworthiness through (1) triangulation of multiple data sources, (2) multiple individual and participant focus-group interviews, (3) reflection on my potential researcher biases by keeping a research journal, and (4) clarification of transcriptions with the participants.

Findings and Discussion

Ongoing data collection and analysis revealed six assertions addressing the value of the reflective process, how reflection assists preservice teachers as they develop theories about learning and teaching, and how reflection helps preservice teachers reconcile the relationship between theory

and practice. Representative illustrations from the data were chosen to give voice to the participants.

Six Assertions

1. There is a distinction between the power of personal reflection and collaborative reflection.

The following comments made about written reflection in particular illustrate participant experiences within the general teacher education program prior to this study. When the subject came up during our last focus-group interview, Elaine said, "You hear it [reflective journal] the first of the semester when you get the syllabus and you hear it right before you go into the field and you hear it when you come back, meaning you've got to turn it [reflective journal] in." Katherine added, "I think to myself, 'they just have us keep a journal so we can say we do this (reflective thought).'" Elaine commented about the additional pressure of graded journals: "It becomes . . . a burden and you think, well, I have to do this for my grade so I'll type something and say this is my reflection."

Comments indicated that written reflective assignments in other classes had become little more than just another course requirement. Anne said, rather complacently, that journals were difficult to keep up with in other classes and were not often taken very seriously by preservice teachers. "You hear the word [reflection] a lot but that doesn't mean you do it." These reflections may imply that written journal requirements are not often taken seriously by the college instructor and therefore are not used fully by the instructor or the student as a tool for understanding.

However, as I examined and analyzed reflective journal entries from this study, the value they held for me as a researcher emerged and, therefore, for the participants as well. Specifically, written thoughts were usually in-depth, lengthier, and more detailed than some of their conversational reflections. Perhaps this was due to the fact that written reflection occurred after the focus-group interviews. Perhaps this was due to the fact that participants had at least a week in which to respond to the key questions given during the focus-group interviews.

When I asked the group if they thought writing was a reflective activity, Katherine responded, "I would rather sit down and talk to a tape recorder

than write it down.” Allie agreed. She said, “I love writing, but I think I’m more worried about the words when I’m writing.”

The consensus among the women implied a need for teacher educators to encourage reflection in ways other than writing. That is to say that preservice teachers were eager for collaboration. Particularly interesting was the fact that preservice teachers even extended their conversation to discuss how they might reflect when they are teaching full-time. Immediately, Allie said, “You just don’t have time to sit down and write.” Katherine added, “I think reflection is seeing other teachers and talking to them about something that happened in your classroom.”

Although it wasn’t the preferred form of reflection, there was a place for and a value in reflective writing. Namely, it was a tool that elicited thoughtful and careful answers to questions. Occasionally, illustrations from written reflections were used as a guide to prompt meaningful conversation in the focus-group sessions.

Elaine summed up the social and individual components of the reflective process in the following comments. Her observations about social reflection underscore the value preservice teachers placed on face-to-face dialogue:

There are two parts to reflective problem solving. First, you reflect the problem onto the community. . . . That is, we should seek the opinion of the community. This is significant because it shows that the individual values the perspective of others in his or her own community. In return, the community reflects their [*sic*] perspective back to the individual. This establishes a valuable community interaction that focuses on the exchange of ideas and beliefs between its members. It emphasizes the importance of collaboration and communication within the group.

The next part focuses on the individual’s personal reflection. After hearing what members of your community value as important or significant, you can combine that with your own personal ideas. In other words, by listening to the perspectives of others, you are able to construct meaning for yourself. Through this process, you become more in charge of your own learning and may even become more self-directed.

2. As preservice teachers practice reflective problem solving, the dialectical relationship between thought and action reveals the social nature of reflection.

Participant comments consistently revealed the impact that talk, public examination, and shared problem solving had on the development of their personal understanding. Through collaborative dialogue in the focus-group sessions, all four participants began to coordinate their insights with their implications for classroom instruction.

For example, during one focus-group session, Allie described her second attempt at the learning activity with a handful of third graders. "I created a math-based learning activity aimed at seeing if children could form a whole (a circle), understood the concept of a whole and, most importantly, how they went about doing it." Reflecting on Allie's description of how the children discovered their own strategies, one preservice teacher commented that Allie might consider using "the concept of part to whole as an opening lesson for a unit on fractions." Each preservice teacher rallied around Allie to make suggestion after suggestion. As a result of the cooperative problem-solving time, Allie revised her learning activity for a third time to focus on whether or how the third graders understood fractions. As Allie was able to examine her ideas, listen to suggestions, and incorporate them into her instructional actions, reflection became a true social problem-solving process.

Later, at one of our last individual interviews, Allie made the point to mention the following:

When I had individual interviews with you, I would watch the videotape of my learning activity and realize what I did and what I should have done. . . . I also realized how the student's thoughts were evolving by watching her on the videotape. . . . I actually saw how Erin came to understand fractions! Just talking to you and having you ask me questions each time I tried the activity was really helpful.

Allie reflected not only on her own practice but on how the student solved her problem. She focused on the child's thoughts as an indicator of understanding and, in the process, was overjoyed at "catching a child learning."

3. Multiple layers of reflective interaction add considerable power to the value and process of reflective inquiry.

Social reflection in this study took the form of individual and focus-group interviews. During these reflective dialogues, preservice teachers

attempted to solve the problem of how children learn and, therefore, what instruction should look like. They discussed their personal learning experiences, their individually designed learning activities, and their questions about what they saw on the videotaped versions.

While Allie felt the individual interviews were especially helpful to her, the other three participants were more vocal about the group interviews. Allie said, "I found that our interviews triggered ideas which helped me to better grasp how I feel children come to learn." All agreed that while the personal interview was a time of collaboration and intellectual stimulation, individual interviews without focus-group interviews would not have been as enriching.

During one of our individual interviews, Elaine shared her insights about the benefits of reflecting in a social setting:

When I talk to other people it just opens my mind more. . . . It gets the ball rolling. . . . I can get frustrated when I'm by myself, and the other preservice teachers give me insight and get my mind working. . . . When I talk to people in a group, I get the insight I need.

Later, Elaine told the group,

I know in talking to ya'll [*sic*] that I think about my own personal beliefs, and we come to some type of realization or confirmation. . . . I'm not really trying to figure out what you believe and come to your understanding, but maybe you'll present something in a way that might help me understand my own thoughts better.

Corporate reflection with me and with peers supported and sustained preservice teachers as they sought to find clarity in their ideas. Emerging theories were continuously filtered through social dialogue.

During our final group interview, several comments about the value of social reflection surfaced. Elaine said, "It made me improve. . . . I say look at this and give me some ideas on what I can do better. . . . You catch things that I don't see." Katherine added that meeting in the group helped her: "I know that I have so much to learn, and I can't do it all by myself. I want and need to know what others think and their advice on what I think. I have greatly benefited from this [research study] and think that something like this would be good for all education students."

4. As a community of learners, preservice teachers are free to acknowledge, articulate, assess, and augment their thoughts.

All participants were willing to put their personal ideas on trial by submitting them to internal and external critical assessment. Anne, for example, described how there were obvious benefits to participating in a community of “critical friends.”

I thought it was so interesting how someone could share one thought from their [*sic*] own private reflection time, and from that one thought a “meaty” conversation would develop and inevitably lead to a sort of group reflection. This proved beneficial because I could hear everyone’s “side.” I think we learned a lot from hearing each other talk and watching each other grapple and grow. This type of “open forum” is so valuable to help us hash out ideas and to gain new ones—to reflect and to help each other reflect.

Katherine shared a similar sentiment about the social nature of reflection when she said,

This has helped me ’cause it’s so easy, it’s like a place you can come and just say things and nobody is gonna think you’re weird. It’s kind of like you debrief for the week . . . I’ve noticed myself in my other classes thinking about what we’ve said and I think. . . . I have benefited more from this than I have any of my classes this whole semester.

The participants could construct and articulate among themselves their educational theories of theory and practice. In the following excerpts, preservice teachers shared their theories about learning and understanding. Allie noted that teachers must encourage students to “be able to look at things through multiple perspectives,” and Katherine said, “Finding answers, exploring, investigating, discussing . . . all that stuff [*sic*] can lead to understanding a lot more so than memorization.” Elaine summarized the general disposition of the group in the following account:

I think that if we give students an experiment, they’re going to understand, because they are having to personalize the material, draw their own conclusions, and figure it out for themselves. They are constructing knowledge and understanding for themselves.

Through individual and focus-group interviews, preservice teachers learned the intrinsic skills necessary to engage in the social evaluation process.

5. Community, dialogue, and reflection are not separate and isolated from one another. Instead, all are incorporated into the development of self-knowledge, knowledge of how children learn, and the development of instructional strategy.

Self-Knowledge

All participants experienced a heightened degree of self-awareness either as a learner, a teacher, or both. Throughout the study Katherine indicated how the study, in conjunction with her experiences in the Foundations of Education course, enabled her to make important distinctions about learning and in her personal life as a learner. Elaine also revealed the importance she placed on reflection as an opportunity for self-evaluation:

The personal interview was a time of collaboration and intellectual stimulation. I often found myself in intense thought after our meetings. I was able to wrestle with constructing my own theory of learning. In fact, while I was trying to come to an understanding of how children come to learn, I was actually growing and learning myself.

Perhaps Katherine and Elaine exhibited the most self-awareness of the four participants. All, however, discussed the strides they were making toward greater self-knowledge, hopeful that the process would positively impact their role as teacher. As Dewey (1933) suggested, it is essential to talk about our experiences in order to solve better the problems we encounter.

Dewey maintained that because the development of the self is largely through social processes, “we become familiar with our developing selves indirectly” (Campbell, 1995, p. 41). When preservice teachers in this study were able to see how important reflective thinking was for themselves as learners, they were able to know themselves as reflective practitioners.

Knowledge of How Children Learn

Throughout data collection, each participant openly grappled with one particular idea regarding learning: whether there was a difference between learning and understanding. According to Allie, “Learning is the act of gaining understanding to the extent that you can teach someone else.”

Elaine concurred, stating that learning is the “active participation in understanding.” Anne concluded that a person can know something and still not completely understand it. She went on to say, “True learning yields true understanding.” Katherine declared that “true learning is synonymous with understanding.” During the series of focus-group interviews, all participants described the concept of learning as united with and inseparable from the concept of understanding. Naturally, in at least one of the focus-group interviews, the subject of the relationship between understanding and instruction arose, especially with regard to the emphasis on understanding, or lack thereof, in the contemporary elementary school classroom.

Another theme participants emphasized was the importance of focusing on children’s natural problem-solving strategies rather than imposing on them teacher-instituted rules and regulations for problem solving. The preservice teachers’ inquiries into how children learn led to social discourse about the theories children naturally employ to make sense out of their experiences. Eager to convey her enthusiasm about her learning activity during an individual interview, Elaine exclaimed, “Yeah, they do have theories. They were eager to test their theories and come up with their own ideas!” During a focus-group meeting, when Elaine was viewing and discussing her second learning activity with the group, she shared her beliefs about natural learning: “They [children] construct their own theories, and they hold that knowledge important because they’ve constructed it, struggled with it, and made sense of it.”

Coordinating these insights with their implications for classroom instruction, Anne reminded the group that students can come up with their own successful strategies for learning if we, as teachers, “just stay out of their way.” Participants agreed with Gardner’s (1991) suggestion that teachers should create an environment where children’s incipient theories about the world around them could be heard and appreciated. These reflections not only implied how important it is for teachers to allow children autonomy in problem solving but also implied the need for teacher flexibility when interpreting children’s responses.

Instructional Strategy

Participants coordinated these insights with their implications for appropriate classroom instruction, revealing that (1) instructional focus

should be geared toward helping students discover their own natural ways of knowing and, then, developing them to a more refined level, and (2) instructional strategies should include letting students actively “see and experience things for themselves” through “individual and group projects, play-acting, and round-table discussions.”

Participants realized that understanding has a relationship to experience and, therefore, teachers should include opportunities for children to experience things for themselves in order to promote understanding. For example, two of the participants said that teachers could make content more meaningful, accessible, and understandable by encouraging students to investigate, explore, and interpret ideas rather than merely memorizing them or having them dictated by the teacher or the text. Elaine suggested using scientific experimentation and Allie suggested that teachers encourage students to look at their experiences from a variety of vantage points in order to facilitate more sophisticated understanding. Both of these ideas directly relate to Dewey’s (1933) conclusion that we, as teachers, need to help students develop into problem solvers, to help them learn how to think, rather than to fill them with whatever we think they ought to know for later in life.

6. Through the process of reflection, preservice teachers can define their own emerging theories and understanding of theory and practice as a constantly evolving relationship.

Typically, preservice teachers do not think about the reciprocity between theory and practice. Nor does research on reflectivity ordinarily focus on this content. In this study, however, preservice teachers had the unique opportunity to practice problem solving in an elementary field internship as part of a Foundations of Education course. The context for reflective thinking was an interesting platform to view how preservice teachers began to think about the theory-practice relationship.

Furthermore, all of the participants were able to discuss how specific thinkers (i.e., Gardner, Bacon, or Plato) supported their personal theories of learning. Two participants also articulated their awareness of a necessary relationship between theory and practice. In doing so, they revealed a complex understanding of the recursive and reciprocal relationship between knowing and doing; a point that is often elusive to preservice teachers.

In the excerpt below, Elaine begins to explain her thoughts about the relationship between theory and practice in the context of scientific inquiry.

I believe that theory and practice, in a sense, inform each other. I consider theory to be a “tested hypothesis.” . . . Only after you have tested this hypothesis many times may you call it a theory. A theory is not a “universal.” It is merely a tested hypothesis. For example, until Copernicus came on the scene with his new model of the universe, people had believed for centuries in the theory that the earth was the center of the universe. Their initial theories had been shattered by Copernicus’ new theory. I guess I am trying to say that theories are not carved in stone.

The following reflection revealed Anne’s theory about how children learn and directly applied it to her understanding of the theory-practice relationship:

When I questioned and observed the thinking patterns of the children, I realized that my theory is that children learn by discovering things on their own. Therefore, I will practice this in my classroom by allowing them to do discovery learning. However, if this theory is not applicable to the situation, I will alter my approach.

Katherine also shared how the course had influenced the development of her thoughts.

Without reading about what Plato, Socrates, Rousseau, Locke and others thought, I don’t think that I would have searched so hard to find what I believe. I think that it is very important that we learn from the past. Specifically, I agree with Piaget and others that children learn to use knowledge they already have to acquire more. I also agree with a lot of what Gardner says. I relate most to his theory of the 5-year-old mind. When I read his views, I thought, “This is me!” It seems like I will never be able to completely leave behind the errors of a “5-year-old mind.” . . . I guess I kind of feel like a prisoner emerging from Plato’s cave [*The Republic*]. I have to continue the journey upwards and out and get comfortable with this battle between equilibrium-disequilibrium.

Anne and Elaine clearly stated the components of Dewey’s notion of reflection as experimentation and problem solving, and all participants

actively correlated their personal learning histories and their field experiences with specific philosophical and psychological theories in order to shape and support their ideas about how children learn. These preservice teachers were showing obvious signs of careful reflection and great insight for future action.

CONCLUSION

While there are studies that contribute to our understanding of individual reflection and teachers' reflective disposition toward teaching, this study extends the existing research by attending to the social nature of reflection and preservice teachers' reflective dispositions toward learning and teaching. The purpose was to examine the reflective process through which preservice teachers solve the problem of how children learn. Preservice teachers directly confronted evidence that helped them acknowledge and evaluate their intuitive theories about how young children come to know.

During the study, preservice teachers designed, implemented, and examined a learning activity aimed at understanding how children solve problems. They observed, discerned, described, and analyzed aspects of learning in order to respond intelligently. The process of reflection, in this case, was the passage through which preservice teachers could see that students' learning is central to instructional choice.

Through reflective problem solving, preservice teachers became creators of knowledge. In other words, instead of putting theory into practice by acting as a conduit for problem solving done by others (i.e., teachers, mentors, experts), they constructed personal theory in practice. Their theory became the instrument used to solve the problem of how children learn. As preservice teachers became aware of the necessary relationship between theory and practice, they began to understand the complexities of the reciprocal relationship between knowing and doing, and they became increasingly able to respond to the unique needs of each learner. Multiple and regular opportunities to review their thinking with me and with peers meant that emerging theories were continuously filtered through social dialogue.

By creating a *social* problem-solving community where preservice teachers express their thoughts about education, within coursework that

underscores theories of learning, preservice teachers think critically about personal beliefs and construct stronger, more informed ideas about the relationship between learning and teaching. When preservice teachers see how important reflective thinking is to themselves as learners, they are more able to know themselves as reflective practitioners. This study suggests that teachers who take advantage of reflection as a social problem-solving process are skilled at noticing and attending to the details of individual learning.

The process of reflective inquiry in an open forum reinforces the development of personal understanding and gives rise to the cooperation necessary by individuals to address shared values. There is implicit liberty within a community of “critical friends” to encourage growth in one another and to, therefore, work in tandem to respond intelligently to each student’s learning.

The social nature of reflective thought is especially constructive in developing teachers who are equipped to consider how specific instructional choices relate to student understanding. What does this mean for teacher educators? The findings suggest that we (1) position the relationship between teaching and learning as an inquiry, a problem to be solved, (2) provide persistent, practical opportunities to develop personal theory through experimentation, and (3) capitalize on the social nature of reflection in multiple ways.

If a reflective disposition is essential to responsive teaching, then we have an obligation to develop the habit of inquiry during preservice teaching, before teachers are preoccupied with the external demands of everyday teaching (Collier and Meyers, 2003). As Dewey (1933) said, the habit of inquiry perpetuates itself. It is an art that requires an integration of both external and internal elements, public and private resources, individual and communal strengths.

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The Nature of Reflection

Experience, Reflection, and Action in a Preservice Teacher Literacy Practicum

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ABSTRACT

The reflections of preservice teachers in a literacy practicum are the focus of this report of research. Schön's (1987) construct of "reflection in action" informs our analysis of how professional wisdom of practice developed for our elementary preservice teachers through a cycle of experience, reflection, and action. Our research team used teacher-research and inductive, qualitative methods to describe and interpret the nature of reflection of six participants. The context of this study, a literacy practicum, was a unique opportunity for preservice teachers to practice their craft with mentorship.

Through our cross-case analysis, we found that sources of influence on tutoring, such as course readings, both allowed and constrained opportunities for analytic work on the part of the preservice teacher. Drawing from case studies, we expand on two types of reflection: "reflective connections" between experience and action and "visioning" of oneself as a teacher who holds a set of beliefs and practices.

INTRODUCTION

Shulman (2004) challenged research in the teaching community to consider the qualities and sources of teacher knowledge that are represented

in the “wisdom of practice.” According to Shulman, professional wisdom is rooted in practical knowledge and is inclusive of behaviors, dispositions, and decision-making processes. The processes most central to the development of practical knowledge and wisdom are experience (Dewey, 1966), reflection (Schön, 1987), social-mediation (Wertsch, 1991), and the construction of core narratives (Bruner and Weisser, 1991). These processes are part of a cycle of reflection in and on action.

Schön’s (1987) construct of reflection in action can describe how most professional action is based on the interconnections between experience and action, as “reflection in action allows practitioners to change the way they go about solving problems” (p. xi). Reflection occurs “in action”; Schön describes this as “an *action-present*—a period of time, variable with the context, during which we can still make a difference to the situation at hand [and] our thinking serves to reshape what we are doing while we are doing it” (p. 26). Reflection also occurs “on action,” in a later moment, when it is further mediated by the context of the reflection and all it entails: the genre, the audience, the purpose of the speaker, and so on.

Sadly, much of teacher education tends to focus on the acquisition of declarative knowledge of teaching (content, pedagogy, and curriculum) and the mastery of skilled routines rather than the processes of learning to teach. To inquire about the nature of reflection is to inquire about the realities of teaching and perhaps challenges the traditional methods of many preservice teacher preparation programs. Also, as Duffy (2002) points out, to inquire about reflection asks preservice teacher educators to examine their own “culturally-engrained ways of teaching” and how those are sources of influence on the practices of preservice teachers (p. 340).

Our research is designed to reveal the qualities and importance of components of teacher preparation programs that focus on the development of practical knowledge in teachers of literacy at the elementary level. The context for our research is quite specific: tutoring experiences in preservice programs. Tutoring experiences matter and we are fascinated by the multiple sources of influence on teaching practices and how these teaching experiences become the bases for lifelong professional learning (Bruner, 1986).

Our focus, specifically, is on the role of reflection within the tutoring program in which we teach and research our practice. First, we briefly review the literature on tutoring experiences as part of preservice teacher

preparation programs, to put forward a framework for understanding the reflective component of tutoring. Then, we describe the research context and the ways in which reflection is built into various components. Finally, we interpret the nature of reflection across contexts and cases.

TUTORING IN PRESERVICE TEACHER PREPARATION

In his classic book *Actual Minds, Possible Worlds*, Bruner (1986) focuses on the act of tutoring as fertile ground for exploring the socioconstructivist dimensions of teaching and learning. Beyond the theoretical and research opportunities afforded by tutoring experiences, there are also the practical win-win outcomes for both preservice teachers (the tutors) and for their students (the tutees). Research literature on the effects and qualities of effective tutoring programs in preservice teacher education is limited but growing (see Richards and Lassonde, 2009, for an excellent summary of this literature).

At the broadest level, the research on tutoring suggests that more than 40% of teacher preparation programs include tutoring as a significant part of the preservice program (Roller, 2001). Further, recent research suggests that significant emphasis is placed on carefully structured and supervised tutoring programs in some of the most effective teacher preparation programs in the country (International Reading Association, 2007; Harmon, Hedrick, Strecker, and Martinez, 2001; Sailors, Keehn, Martinez, and Harmon, 2005).

Tutoring has been cited by preservice teachers as one of the most valuable aspects of reading preparation courses (Fang and Ashley, 2004). From studies of reading-literacy teacher preparation in practicum experiences, it appears that preservice teachers learn the impact of individualized instruction and close observation and assessment of literacy in these experiences (Hedrick, McGee, and Mittag, 2000).

The cross-cultural nature of tutoring experiences is especially important given the white, middle-class demographics of the teaching staff of many racially and ethnically diverse schools (Sleeter, 2001). In tutoring programs that involve careful planning, monitoring, and analyzing of tutorial experiences, students may be better prepared to adapt instruction for children of diverse populations (Hart and King, 2007; Hedrick,

McGee, and Mittag 2000). Tutoring experiences can lead to relationships that cross cultural, linguistic, economic, and other borders, often shifting preservice teachers' stereotypes about students (Lysaker, McCormick, and Brunette, 2005; Nierstheimer, Hopkins, Dillon, and Schmitt, 2000; Worthy and Patterson, 2001).

The process of tutoring also creates a dialogic environment for preservice teachers to try on professional identities within school literacy events (Rogers, Marshall, and Tyson, 2006). Teachers' professional identities include their practices and knowledge as well as their perspectives and beliefs (Britzman, 2003). Given the increasingly widespread use of field-based tutorial experiences to develop professional practice, we identified a need for further research about professional identities—both research on how practices and beliefs of a knowledgeable, reflective reading teacher are constructed within tutoring and, returning to Shulman (2004), research on the nature of reflection and how to mediate preservice teachers' processes of reflection and building wisdom about practice.

Specifically, we asked, *in what ways did preservice teachers reflect on their pedagogical practices? How did instructional content (course instructor interactions, course readings, and video tutorials) mediate reflection? What did the reflection look like and sound like?*

THE TUTORING PROGRAM AT SOUTHWESTERN STATE UNIVERSITY

There is a 40-year tradition at Southwestern State (pseudonym) to emphasize field-based teacher preparation that includes university methods courses taught in the public schools with a strong tutorial component. The degree program offers preservice teachers the option of completing a reading specialization, which includes tutoring in all three semesters of the professional development sequence. Students engage in one semester of observation in an early childhood program (two mornings a week) and two semesters in an elementary school classroom (two days a week during the second semester and full time during the third semester of student teaching). Our research focused on one reading specialization cohort and their tutoring experiences at an elementary school that serves a low-in-

come, Hispanic community. We focused on the first semester as a context to study the emergence of reflection in- and on-action.

In the first semester, preservice teachers worked with a primary grade child, tutoring two times a week in 45-minute sessions for 12 weeks. A series of tutorial components were introduced across the semester. These included Read Aloud, Language Experience, Poetry Warm-up, Guided Reading, Sentence and Word Work, Inquiry, and Jokes. Preservice teachers were supported through guidebooks, in-class and online demonstrations, and video cases of the tutoring components. They were responsible for assessing learners throughout the semester, preparing lesson plans for each tutorial session, and reflecting in writing after each tutorial session. Faculty observed the tutoring sessions, responded to lesson plans and reflections electronically, and facilitated debriefing sessions.

A second tutoring experience during this semester took place in a community literacy course at an evening ESL adult literacy program. Although not the focus of this paper, across the three semesters there was a general movement from tutoring an individual student to tutoring a small group, and from reading narrowly considered to literacy more broadly defined. A cycle of experience, reflection, and action held all of these experiences together to support the development of knowledge through practice.

RESEARCH DESIGN

The design of our research is qualitative (Strauss and Corbin, 1998) and draws from action research methods (Williams and Brydon-Miller, 2004). We collected data as teacher-researchers interested in how our courses that contain field experiences support the development of reflective practices and pedagogical knowledge (see also Hoffman, Mosley, Horan, Russell, and Warren, 2009). Thus, our research sought to clarify our goals and purposes as teacher educators through ongoing, systematic inquiry as a research team. We held monthly research meetings and informal meetings between class periods to share and compare field notes (scripts) of the tutoring sessions (two observations per week) and our observations of preservice teacher learning. During these meetings, we planned for instruction based on our ongoing analysis of preservice teacher learning.

We analyzed data for 6 participants of the 19 in our cohort of preservice teachers who consented to the study. These six participants were chosen purposefully as different cases, based on our observations of the ways they engaged with tutoring as a learning experience. The participants, Mia, Holly, Kaitlin, Colleen, Abby, and Claire, were enrolled in a preservice teacher education program at a large Southwestern university in a reading specialization cohort (self-selected). They were all white women, and all except Colleen were from the same state where the study occurred. Colleen pursued a bachelor's degree in studio art from the Midwest before coming to the program, and Kaitlin is a post-baccalaureate student with a major in Spanish studies.

Data were collected over the first of three semesters of the cohort's work in practicum and methods-based courses in elementary education. In the first semester of this program, they were enrolled in courses called Community Literacy, Reading Assessment and Development, Guiding Young Children in Groups, and Math Methods. They also watched and responded to video cases of tutoring to support their one-on-one tutoring with a first grader for 14 weeks. Preservice teachers were responsible for planning all lessons, including the selection of materials, instructional activities, and assessments for instruction.

We compiled all written responses from the data sources into word-processing documents. We analyzed every posting to identify the mention of any planned tutoring activities (e.g., book selection, questioning strategies) and then extracted those responses into new documents. We identified the source of influence as best we could determine from the explicit statements or from inferences we made regarding the comments. We placed each statement in a row of a table, coding them by marking the sources of influences mentioned by the participant and adding our analytic notes (Bogdan and Biklen, 1992).

As a research team, we compiled our codes into a shorter, inclusive list of codes and then reanalyzed the table created for each participant. We counted the occurrence of each source of influence (more than one source of influence was often mentioned by the participant) and checked the coding for each participant for consistency. Using a case study methodology, we analyzed the ways the various sources (e.g., the video case website) shaped the tutoring practices of each participant (Merriam, 1998). Finally, we looked across cases at the sources of influence and their impact across cases.

THE NATURE OF REFLECTION ACROSS TIME AND PARTICIPANT CASES

The tutoring component provided a long, extended context for reflection. Our participants, all white women under the age of 25, had a range of experiences working in local schools where most students are Mexican American and live in working-class neighborhoods. Together, they met twice weekly in the same school with students from the same classrooms. They read and discussed theoretical articles about reading assessment and development, debriefed about their students' literacies, and worked together to complete community literacy projects. Every night they were active on our online site, posting in response to readings and one another, posting lesson plans and reflections, and interacting with web-based videos that guided their tutoring. We found that through their written responses in this online format, experience and reflection led to practice in fascinating ways.

From our coding for sources of influence on the preservice teachers' tutoring using the data collected, we found that often during reflections on tutoring, the preservice teachers described "aha moments" in which they had a strong emotional response to experiences or realizations. We described students' "aha moments" and also their "visioning statements" (statements about the participants' envisioned future-capacity as a teacher) as reflections with *no immediate action plan*. We also coded for sources of influence on tutoring that accompanied these reflections. The participants planned actions based on their viewing of video cases, course instructors, peers, and course readings among other sources of influence. Table 4.1 displays how many occurrences of each code showed up for each case and across cases. Across cases we coded "aha moments" and "reflective connections" that overlapped other mentions of sources of influences on the preservice teachers' tutoring.

The prevalent sources of influence across cases were part of the course instructional content. The six focal students noted the influence of the video cases on tutoring 57 times during the semester (almost every time they watched a video), whereas they noted the influence of course readings (54 occurrences) and instructors (45 occurrences) slightly less frequently. To understand the nature of reflection and its role in learning in this context, we looked more carefully at two areas. First, we examined how reflection was mediated by instructional content, such as course

Table 4.1. Sources of Influence Across Cases

	Reflection	Aha Moments	Stellar Tutoring	Readings	Course Instructor	Visioning Experiences	Past Experiences	Student Request	Peers	Cooperating Teacher	Parents	Total
Holly	11	5	7	0	8	2	0	2	2	0	0	37
Kaitlin	24	9	4	1	7	1	0	0	0	0	1	47
Mia	11	1	9	5	6	2	4	2	4	1	0	45
Claire	12	16	14	17	10	8	5	2	3	2	1	90
Abby	38	18	9	11	9	7	6	0	3	0	2	103
Colleen	35	29	14	20	5	21	17	7	1	3	0	152
Totals	131	78	57	54	45	41	32	13	13	6	4	474

readings, video case models of tutoring, and course instructors. Then, we looked more carefully at the nature of reflective practice.

Reflection Mediated by Instructional Content

Written reflection around instructional content illuminated common sources of influence on the preservice teachers' tutoring. These included course instructors, videos, and readings.

Course Instructors

For many preservice teachers, course-instructor suggestions influenced their interactions with students inside of tutoring. The students often mentioned in a written reflection whether a course instructor suggested an instructional method. These particular references were often tertiary to their reflections as a whole. For example, Mia wrote in a reflection on her lesson plan, "Dr. Mosley got Mateo to pick a line out of the book and it was a little weird, but we added words to the sentence and he really seemed to enjoy it. I was surprised" (Lesson Plan Reflection, February 19, 2008).

There were a few exceptions. Jim was a particularly strong influence on Holly's tutoring, as a constant presence during her tutoring sessions and in her reflective writing (Lesson Plan Reflection, March 25, 2008). After her sessions, they would debrief as well (Lesson Plan Reflection, April 3, 2008). On one occasion, Holly struggled with whether to show her student that she was assessing his oral reading using a running record (Johnston, 1997). She wrote,

Dr. Hoffman was telling me to change my body position and I know he will know what's best for me, yet I feel I should try to justify my actions because I am afraid that I'm not going to be a good teacher because I don't know all of this already. (Lesson Plan Reflection, April 22, 2008)

Jim was a key source of influence for Holly, giving the feedback she needed to feel successful.

Course Readings

Preservice teachers also triangulated course readings with their reflections on tutoring. Often, a preservice teacher reflected that an instructional

practice from the reading might be effective with a student. Other times, the preservice teacher used the readings to assess a student.

For example, Kaitlin read an article about how readers rely on context for comprehension:

I enjoyed reading about the traits that characterize high progress and low progress readers because it gave me specific skills that I can model to my student. Based on what I observed during my first session, it seems that Tony has no problem verbalizing text, but I wondered if comprehension could be an area of growth? (Reading Response, February 2, 2008)

Kaitlin planned to take up the instructional practices suggested in the article and also to extend this plan to include careful observation of her students' strengths.

The preservice teachers also critically analyzed the course readings in light of what they observed about a tutee's reading and writing. For example, Mia responded to an article on literacy assessment by writing about the role of informal and formal measures of literacy, especially the limitations of standardized testing. Mia reflected that "the reading folder is more personal and you can see more of the creative side of the student that can't be captured as well in a checklist" (Reading Response, January 30, 2008). When she shifted to talking about Mario, a first grader with hesitations around reading, she concluded, "I am going to get a clipboard." Mia knows the pressure of high-stakes testing. The article she read, her history as a student in an accountability era, the format of the reading reflection, and her vision of her student, whose strengths would be masked by standardized assessments, all possibly mediated Mia's reflection.

Mia's reflection drew on her developing wisdom of what works, in what context, and took a position about what comes first—the clipboard, a symbol of on-the-spot assessment. She recognized how using a clipboard to keep track of anecdotal notes, running records, and other on-the-spot assessments could meet the needs of her student more than standardized tests. Similarly, in an article on adult literacy (Rogers and Kramer, 2007), Claire questioned whether the author put enough emphasis on choosing a text that is engaging for a reader, a critical element of her tutoring. She wrote, "As I reread Rogers' above statement, I realize that she left out an important part—reading can only be an emotional activity when the content, language, and format of the book are appealing" (Reading Response,

February 28, 2008). Claire, like many of her peers, recognized when what she read did not align with other influences on her tutoring.

Models of Tutoring

Preservice teachers also reflected on video tutorials that modeled practices for tutoring (e.g., guided reading). Abby found encouragement in one video to engage in a “data gathering process” to observe her student and record her observations immediately after the session (Video Response, January 28, 2008). This data gathering became further defined for Abby as she watched more videos. In her responses to the videos on language experience, Abby noted that she was learning “who Markey is, who his family is, what he likes to do, and what he thinks is cool” using a photo-story project (Video Response, February 4, 2008). During guided reading, she was learning to observe the strategies that Markey brought to a guided reading text. The videos spurred this extension of “data gathering” by providing examples of what the teacher does during tutoring, moving beyond choosing books and using assessments to the language of teaching literacy.

Across cases, we saw examples of the preservice teachers finding inspiration in the practices of the video but also gaining clarity on what instructional practices look like and sound like—especially guided reading (Fountas and Pinnell, 1996). Colleen wrote, “I’m glad that guided reading is not a ‘shut up and go away time’” (Video Response, March 2, 2008). Abby wrote, “I like the idea of thinking out loud and talking out loud during guided reading. It seems like I’ve felt like guided reading means me just sitting back and taking notes while my tutee takes ownership of the reading” (Video Response, April 9, 2008).

Holly and Mia both raised questions when the tutoring videos seemed to run counter to their learned model of guided reading, which indicated that the videos helped them notice partial understandings of the practice. Holly wrote, “And a side note question—I thought we weren’t supposed to give praise? When is it ok? I’m confused” (Video Response, February 27, 2008).

The video cases also provided language for the preservice teachers to talk about the process of learning to teach in this context. After viewing the overview videos, Claire wrote that she liked the idea that she would

be reflecting “in action” and “on action” while tutoring, and the idea that reflection is about looking forward to the next lesson or event rather than only looking backward (Video Response, January 22, 2008). Colleen focused on the idea that tutoring was a place for her to gather language from the child, from texts, from her own reflections, from lesson plans and to “have them [tutees] become saturated in literacy with us” (Video Response, January 27, 2008). In both cases, the videos helped clarify the purpose and goals of their tutoring.

We also found through our analysis of reflective practice across the data sources that there were differences in how instructional content shaped the purpose and goals of reflection. The preservice teachers relied on course instructors for help at times, but their suggestions were taken up uncritically. In contrast, the reflections on course readings in relation to tutoring seemed to be more analytic, furthering preservice teachers’ understandings of their students’ literacy behaviors and providing choices of instructional strategies. The models of practice in the videos clarified some confusion around practices, but they also were an opportunity for preservice teachers to think more deeply about their own students’ needs and interests. In the next section, we further examine the nature of reflection in two case studies.

The Nature of Reflective Practice

The following case study illustrates what reflection looked and sounded like for individual students as they drew upon various sources of influence to shape and reshape their thinking during tutorial experiences. Abby and Colleen were two focal students who wrote their reflections in a descriptive manner and included many narratives in their written work. A closer look at “reflective connections” and “visioning” in their cases demonstrates the nature of students’ reflections as a cycle of looking backward and forward within the tutorial experience.

Reflective Connections

“Reflective connections” were the most frequent source of influence on students’ practical decision making. In these moments of reflection, pre-

service teachers connected a particular aspect of their tutoring experience with plans for instruction, moving from experience to reflection to action.

Abby's case illustrated the nature of these reflective connections within the context of the tutorial experiences and how they contributed to the development of her practical knowledge. For Abby, reflection occurred with the whole body, usually while she listened and wrote reflections. In class discussions, Abby had a habit of leaning forward to fix her gaze intently on her instructors or peers as they shared ideas. Thoughtful contemplation was also evident in her written reflections, where her careful observations of her student, Markey, were the primary influence she cited in shaping her instruction. Abby also reflectively called upon her early childhood experiences as a learner to help her make sense of the present moment with her tutee.

Course assignments were crafted to "look backward"; telling stories to better understand the nature of literacy acquisition and identity. In an assignment that invited Abby to reflect on herself as a reader, she recalled the joy of having her name inserted within nursery rhymes as a child and connected her own experiences to her passion for reading aloud to her students:

I remember this nursery rhyme being my favorite because I got to be in it! I got to be part of a story that my mom read to me out of a book . . . I still love to read. I love getting involved in stories that weren't mine to begin with and making them my own. I especially love reading to kids as I was read to at their age. I love it so much because I get to give them a chance to become part of a story that they might remember for their entire lives, as I have. (Myself as a Reader Essay, May 7, 2008)

This theme of having "a chance to become part of the story," or taking ownership of one's own learning, was evident in Abby's reflections as she responded to course readings, video tutorials, and tutoring experiences. For example, following a video demonstration of a read aloud, Abby wrote, "Letting him feel like it's HIS book and HIS story, I'm just vocalizing it. It gives him ownership over the literature and allows him to start thinking about the story as HIS" (Video Response, February 6, 2008). Abby insisted that Markey be the one to hold the book in future sessions. Perhaps reminiscent of her own childhood experience of her

name inside of nursery rhymes, she chose jokes with Markey's name in them. For Abby, reflections occurred within personal narratives and built toward action as her experiences further materialized in her essays and reading responses.

When writing about tutoring, Abby centered her reflections and plans for instruction on Markey's interests and responses. In an early tutoring reflection, Abby wrote about Markey's words, thoughts, desires, and personality:

Markey Vasquez is extremely inquiry driven. He wants to know stuff. Whether it's animals or doctors, he wants facts. I've seen a common theme building throughout these past few weeks in our sessions; he'll often ask, "What's that word mean?" So we have been developing this vocabulary book that we add words to. . . . I want him to make all this information his own. Heather [a teaching assistant] suggested that in order to quench this thirst he has for knowledge, that we conduct a mini research project. (Tutoring Reflection, February 21, 2008)

Abby began to personalize instruction in ways that encouraged Markey to take ownership of new vocabulary and inquiries. She began with careful observation, moving toward instructional practices. At the same time, Abby herself took ownership of planning for instruction. She drew connections between personal narratives and instructional practices, moved from observation to action, and also identified dilemmas of practice.

In the following narrative, Abby reflected on a common dilemma—when do we follow a student's lead, and when do we introduce a new topic?

I originally had wanted to do a research project on animals. But after making a few more observations and conclusions on Markey's learning style and developmental direction, I can see that he does really well in things that he's super comfortable in and loves exploring topics that he already knows about. (Tutoring Reflection, March 3, 2008)

Abby continued her narrative of how her reflections led to an action, reconsidering her plans:

So I started wondering how I could challenge him, and I thought about all the times I'd brought in a new activity, and how he was a little hesitant to

get involved. My thought is to challenge him . . . but still set him up for success by exploring new topics for research.

Abby also brought her new ideas to Markey for input and captured his responses verbatim (as she often did). She wrote,

I asked him what he thought about the idea of exploring new topics for a research project and his first response was, “What’s a research project?” After we explained and wrote down the concept in his wordbook, he smirked in a shy way and said, “I think that’d be fun. I really like learning.” (Tutoring Reflection, March 3, 2008)

In the sessions that followed, Abby responded to Markey’s interests and feedback by carefully selecting nonfiction texts, offering choices, working on strategies for reading more challenging information words, and planning future inquiries that incorporate technology.

Abby’s reflections portray a particular identity as a teacher of literacy, a teacher who solves problems, follows her observations and reflections with thoughtful action, and invites others to reflect along with her. She wrote about Markey, “He made the comment that ‘It feels like we’re just getting started!’ How right he is! I feel like we’ve just begun! There’s such a friendship and bond that we’ve developed through literature and inquiries” (Lesson Plan Reflection, April 22, 2008). Looking backward and forward together became a habit for Abby and Markey in their work together.

Abby’s reflective connections linked experience and action. Further, they illustrate the notion that experiences were just the beginning of knowledge. Developing her own wisdom of practice, Abby’s thoughtful connections celebrated relationships, inquiry, and the new beginnings that teachers and students continually embark upon as learners. By linking experience and action, Abby’s reflective connections ensured that both she and Markey (“we”) were part of a story that was just getting started, open for reading and rereading, writing and rewriting.

Visioning

The category of “visioning” represents preservice teachers’ reflections, which look toward their prospective role as a teacher (Duffy, 2002). These

statements referenced upcoming work in their student-teaching classroom or their classroom as a future teacher. They were signs of what Duffy (2002) identified as the qualities of successful teachers:

The best teachers are not followers. They evaluate directives from methods course instructors, in-service speakers, teachers' guides and other authoritative sources; override such directives when, in their judgment, something else will work better; and revise and invent yet again on the basis of instructional results. In short, they adjust, modify, adapt and invent; they do not emulate. (p. 333)

As we saw across sources of influence, the preservice teachers always took an active role in placing their own experience with tutoring next to knowledge from outside sources. Visioning statements were explicit statements about positioning in future action-oriented roles. Colleen is one student in particular whose teacher reflectivity was often coded as "visioning." As a mother and the oldest member of the cohort, Colleen brought an enormous amount of maturity to the tutorial experience, which enabled her to continually deepen her knowledge of what it meant to be an effective teacher. In particular, she thought about future work with students while reflecting on a tutoring session, watching a tutoring video, or after reading a particular assignment. Her reflections often included envisioning her role as someone taking on a professional identity and set of practices.

After watching one video, Colleen gained clarity on the process of tutoring:

"It's not a secret what you're working on" was my favorite statement from the overview. It's not that I would intentionally keep my purpose of a lesson secret, but I think it is a message that can get easily lost during the act of teaching. There is great importance in taking the time to teach the "why" as well as the "how," and I think, especially in a fast-paced tutoring session, sharing and reflecting on a purpose is imperative. (Video Reflection, January 27, 2008)

Colleen used this video to develop an ongoing practice for her tutoring session and her future teaching. Visioning, in Colleen's case, suggested weighing choices, leveraging data, and analytic thinking as important actions of the teacher.

She continued to weave narratives using new knowledge, tutoring, and future roles. For example, after completing a course reading, Colleen told a narrative of her work as a tutor to articulate her feelings about the importance of becoming a reflective teacher:

I am beginning to see that, like our tutoring . . . taking notes the entire time of “class” is a must-do if you are to become a reflective teacher at all. This is an article for my personal archives. It is full of great advice and tips, that I can already see myself using. (Reading Response, January 22, 2008)

Colleen acknowledged the new practical knowledge of the importance of formative assessment, applied it to her work with Victoria and, in the end, articulated how both lead to future action.

In another instance, Colleen was asked to write an essay reflecting on herself as a reader. In this literacy autobiography, she took her own experiences and envisioned how they shape her philosophy of teaching. She wrote about the great responsibility of being a teacher and likened it to parenthood.

As she thought about herself as a mother with a particular point of view and set of cultural practices around literacy, she wrote:

It will be quite an undertaking to seek out the literacy history of each student, especially when so much is expected from a classroom and in so short a time. I suppose the best way to do it is to let the children’s interests fuel the energy in the classroom, and meanwhile, infuse the classroom with life’s necessary literacies (computers, books, newspapers, etc.) and make the use of them routine and accessible. (Myself as a Reader Essay, January 23, 2008)

Colleen went on in future sessions to draw directly on Victoria’s interests, including her love of baseball, Dr. Seuss, and learning to draw Chinese characters.

At the culmination of her tutoring experience, Colleen reflected on a question posed by the course instructor in an oral final exam, “What is your confidence level with a new kid who walks in the door?” Colleen’s response was exploratory, as she composed a narrative about her future life as a teacher:

I feel excited about it. I have tools I can use and try out. I’m going to always be a learner. . . . [It is] always going to be this sort of juggling act. . . . I like

the idea of being a tutor forever—to teach sounds so one-sided. (Final Exam Field Notes, May 20, 2008)

We were struck by Colleen wanting to continue to tutor, a practice that allowed her the freedom to know her student, respond to her student, and to imagine a professional identity for herself as an effective teacher drawing on her knowledge as a student-mother-teacher. Reflecting on course readings, videos, and her tutoring, Colleen moved backward and forward between experiencing, reflecting, and “visioning” in a cycle that seemed never stable or final but always in process.

DISCUSSION AND IMPLICATIONS

To suggest that reflection plays a key role in the development of professional knowledge is not a new claim. However, our current research reveals the importance of reflection that is closely tied to “action”—both reflection “in action” and reflection “on action” (Schön, 1987). Reflection, in our work, begins with an experience that is part of a defined program of study; is mediated by the instructional context of the reflection (i.e., a course reading or instructor or video); and often includes a realization, a plan for action, or a questioning of previously held beliefs. Tutoring experiences in the preservice program provided a shared context in which these reflections “make sense”; that is, they have a clear purpose, follow an expected pattern, move ahead with new, practical knowledge, and provide insight into what experiences (e.g., discussions with peers, instructors, viewing of videos) matter to the preservice teacher.

This connection between experience, reflection, and the development of practical knowledge is at its best when the teaching and learning are made visible to all participants through direct observations, lesson plans, conversations, and written reflections. It was not just the activity of reflection that seemed to be critical. Rather, two additional factors seemed important. First, the preservice teachers knew that every form of reflection was going to be read and responded to, either by a faculty member or by a peer. There was the sense of writing to be read by an audience, in addition to the audience of self. Second, the context for reflection was always tied directly to a return to practice in the short term, not some envisioned future. These

two constructs of audience and immediacy were revealed again and again as powerful conditions for reflection that promote learning.

Course content provided a rich context for reflection. There were differing voices included in the mix, from the authoritarian voice of the course readings, to the suggestions of course instructors, to the practical examples that were weighed carefully. These voices and their different influences constructed a dialogic environment (Bakhtin and Holquist, 1981; Rogers, Marshall, and Tyson, 2006). Within the dialogic environment in our study, there were shared experiences, such as the tutoring videos, course readings, and seminars.

Writers who were not as strong as reflective writers did not emerge as our exemplary case studies of “reflective connections” and “visioning.” A limitation of this study is that in order to understand the nature of reflection across cases, we needed to provide oral opportunities for reflection as well.

Tutoring is no panacea for preservice teacher–preparation programs, especially when experiences are assigned but not carefully supported. In the process of doing action research, we have systematically collected data and inquired into the context and nature of reflection for the preservice teachers in our course. It is the immediacy, close support, and relationship building that come with this process that is essential in promoting the development of practical knowledge. Further, as teacher-researchers, we have to work hard on our own reflective writing in order to be more precise in our feedback and more conscious of teacher learning.

The next steps for our research are to explore the ways in which knowledge gained through field experiences (i.e., in semesters 2 and 3 of our program) come back to influence tutoring and how knowledge gained in tutoring moves into other field experiences. We also seek to find new ways of eliciting and analyzing narratives that will help more students make, as Abby did, links between their own literacy acquisition and literacy pedagogy. In the long run, our goal is to explore how teachers take this practical knowledge gained in preservice programs into their lives as practicing teachers. We wonder if Colleen will continue to be a tutor with students, in order to know them more deeply, and how her practices will follow. How will Mia use her clipboard to observe, and what will reflections look like mediated by that tool? We will continue to observe and reflect.

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**TEACHER REFLECTIVITY IN
TEACHER EDUCATION PROGRAMS**

Effective Teacher Preparation

Working to Change Dispositions in New Teachers

Leah Herner-Patnode, Hea-Jin Lee, and Dean Cristol

ABSTRACT

Teacher training programs have the goal to produce teachers that are capable of effectively facilitating the education of all children in their classroom. The success of these teachers often depends on their disposition toward teaching and learning. This study sought to evaluate the growth of preservice teachers' dispositions throughout their teacher training program. The goal was to ascertain what areas showed improvement and what areas are still in need of effective training techniques.

INTRODUCTION

A major challenge for effective teacher training programs is the development of preservice teachers' disposition toward teaching. Teachers that are committed to best teaching and learning practices and the ability to reflect on best practices are more likely to have a positive impact on student learning. A significant method to gather information about disposition is to examine the preservice teachers' reflections on their teaching beliefs and practices. A common requirement in many teacher education programs is the teaching and learning portfolios, which is a powerful tool to determine if the preservice teachers are ready for a career educating

children. The challenge is to assist preservice teachers to develop a positive disposition in an era of high stakes testing.

This study investigated patterns of dispositional development for preservice teachers. Data was collected during the master's degree year of a five-year teacher education program, by measuring the growth of preservice teachers' dispositions toward teaching and learning evidenced in their portfolio reflection papers.

THEORETICAL FRAMEWORK

A critical assertion for most teacher education programs is that the program must prepare teachers to be competent educators who maintain a high content knowledge level and develop a positive disposition toward teaching and learning. While assessments of content knowledge and observations of teaching practices are more concrete measures of achievement, evaluating a person's disposition toward teaching and learning is a difficult endeavor. Appropriate methods of measuring disposition could include questionnaires, interviews, focus groups, and observations (Lang and Wilkerson, 2008). Perkins, Jay, and Tishman (1993) suggest three dispositional elements commonly seen in successful preservice teachers: ability, sensitivity, and inclination. Ability is the capacity and skill to carry out a behavior. Sensitivity involves an awareness of and appropriate response to a variety of situations. Inclination in a person is the behavior to "feel a leaning toward open-minded thinking when he or she discerns the need" (Perkins et al., 1993, p. 4).

The expectations for new teacher's dispositions toward teaching and learning are outlined in the Interstate New Teacher Assessment and Support Consortium (INTASC) standards:

- The teacher realizes that subject matter knowledge is not a fixed body of facts but is complex and ever-evolving. S/he seeks to keep abreast of new ideas and understandings in the field.
- The teacher appreciates multiple perspectives and conveys to learners how knowledge is developed from the vantage point of the knower.
- The teacher has enthusiasm for the discipline(s) s/he teaches and sees connections to everyday life.

- The teacher is committed to continuous learning and engages in professional discourse about subject matter knowledge and children's learning of the discipline. (INTASC, 1992, pp. 14–15)

The INTASC standards provide valuable goals for future teachers; the challenge is how to measure a preservice teacher's disposition. These standards become the ideal that preservice teachers should view as a life-long pursuit, not something that can be achieved in a teacher education program.

The difficulty in developing a positive disposition is further compounded by the length of time a preservice teacher has held his/her beliefs about teaching and learning. As part of their application for admission into our teacher education program, applicants are required to write an essay describing why they want to become a teacher. Several students wrote essays conveying a long-held desire to become a teacher, describing their desire to emulate their favorite pre-college teachers without understanding the context of what it means to be a teacher. These long-held beliefs are often the most difficult to reconceptualize as the person enters adulthood (Markman, 1989). Teacher preparation programs that focus on changing a person's disposition toward teaching and learning rather than a person's core beliefs may have a better chance of success in inspiring a different belief, attitude, and practice toward the profession. The focus on dispositions allows preservice teachers to reconceptualize their personal beliefs within the context of good teaching, which may produce teachers who facilitate the educational experience for their students in a way that is considered acceptable by other professionals in the field (Raths, 2001).

Teacher disposition is the innate characteristics, learned qualities, interpersonal behaviors, beliefs, and attitudes held by preservice and practicing teachers (Pelletier, Seguin-Levesque, and Legault, 2002; Reeve, Bolt, and Cai, 1999; Reiman and Johnson, 2003; Taylor and Wasicsko, 2000). It is assumed that the teacher dispositional characteristics develop over time through participation in professional teacher education programs (Reiman and Johnson, 2003). Johnson and Reiman (2007) claim that the dispositions of a new or beginning teacher significantly influence all students, which is analogous to the findings that teacher quality is a highly significant factor for student learning and development (Collinson, 2004;

Combs, 1974; Wright, Horn, and Sanders, 1997). Assessing or measuring teacher disposition is a complex endeavor (Talbert-Johnson, 2006), not an easily measurable variable akin to academic ability. Yero (2002) maintains it is very difficult to measure these qualities that define excellence in teaching. These qualities are often not observed through direct classroom observations because of the intangible nature of teacher dispositions. While content knowledge and pedagogical expertise are important factors for defining successful teaching, there are others, equally important, that need to be addressed, such as open-mindedness, reflectiveness, intellectual curiosity (Dewey, 1933; Perkins, Jay, and Tishman, 1993) and understanding the context of teaching (Cochran-Smith, 2002; Nieto, 2003). While these traits are admirable and preferable for new and veteran teachers, Facione and colleagues (1995) maintained that just because a person has the ability to think in a careful (dispositional) manner, it should not be assumed that person will have that same ability when interacting with children in the classroom.

The cohort in which a preservice teacher resides for the duration of the program is an important factor that influences preservice teachers' disposition toward teaching and learning. The use of cohorts in teacher education programs is a way to organize students taking most of their coursework as they proceed through the program (Mandzuk and Hasi-noff, 2002; Shapon-Shevin and Chandler-Olcott, 2001). Radencich and colleagues (1998) found that members in a cohort can have a highly positive experience or an "almost pathologically negative" (p. 112) experience. It has been reported that cohorts provide academic and emotional support, which can lead to a high work ethic among the preservice teachers (Darling-Hammond, 1999; Mather and Hanley, 1999). Shapon-Shevin and Chandler-Olcott found that negative critical incidents, strong personalities (Tom, 1997), and the breakdown of trust are some undermining factors for negative cohort outcomes. The research has shown that school settings and personnel during the field experiences significantly influence the dispositions of the preservice teachers (Renzaglia, Hutchins, and Lee, 1997; Richardson-Koehler, 1988; Zeichner and Gore, 1990). While we agree with the research, we also maintain that the interactions of the cohort members may be an equally significant influential factor in the development of the preservice teachers' disposition toward teaching and learning.

Teacher Reflection and Portfolio

Teacher reflection is not simply a teacher's self-description of what took place in his/her classroom. Critical self-reflection is a documented response of the application of ideas in the classroom (Tabachnick and Zeichner, 1984). Teacher educators who value reflective thinking and practices support what is inherent in effective teaching, by thinking about practice in order to improve the teaching and learning process through real world connections (Ward and McCotter, 2004). It is important to make the self-reflection process accessible to prospective teachers and teacher educators in order to examine content and process of teaching and learning. Without elevating the preservice teachers' awareness of these characteristics of teacher thinking and practice, any changes in preservice teachers' behavior are likely to be superficial (Yero, 2002).

The preservice teacher-created portfolio allows the teacher educator to better understand the potentials skill of the new educator by allowing the preservice teacher to reflect on the self-selected artifacts that represent his/her self-understanding of teaching and learning. The goal for teacher educators is that preservice teachers will begin to think more deeply about their teaching styles and their content knowledge that allows for meaningful collegial collaboration and enhances their individual professional growth (Tabachnick and Zeichner, 1998; Zeichner and Wray, 2001). The portfolio in this study served two purposes. First, it was considered a "credential portfolio" to show evidence that preservice teachers understood and implemented state and university standards (Snyder, Lippincott, and Bower, 1998). Second, it was a "learning portfolio" demonstrating evidence of dispositional growth over time (Wolf and Dietz, 1998). For the purposes of this study, the researchers chose to focus on the "learning portfolio" as a means to examine the preservice teachers' dispositional growth in the program.

METHODOLOGY

Teacher Education Program in the Study

The five-year teacher education program for general education teachers prepares preservice teachers to teach in early grades (pre kindergarten–

third) or middle childhood grades (fourth–ninth), resulting in a master’s degree in education and recommends to the state license certification. During the fifth year of graduate studies, teacher candidates participate in a year-long series of courses, capstone and reflective seminars, and field experiences in a variety of settings. Preservice teachers use a portfolio approach to gather evidence of their knowledge, skills, and dispositions. Carmen (Desire2Learn™), a university-designed electronic system, serves as the tool to collect and store this evidence.

Two Cohorts Groups: Early and Middle Childhood Programs

Preservice teachers in this study had the opportunity to complete coursework for a master’s degree in education leading to an early childhood or middle childhood license. The courses that each group completes have similar objectives for pedagogy, methods, and field experience, but the requirements differ according to the program. The approach in the early childhood classes focuses on nurturing the gifts and talents of each student while teaching content. The middle childhood courses’ focus is on the specific academic content and preparing the students to take state-mandated tests in the content areas.

Data Collection

Forty-two preservice teachers were given a scale, which measures dispositions in four areas (able/unable identified/unidentified, able/unable, larger/smaller, and people/things) four times over the year. The instrument, *Assessing Educator Dispositions: A Perceptual Psychological Approach* (Wasicsko, 2002), aligns with NCATE standards (NCATE, 2008). The categories that differentiate a competent teacher from an ineffective teacher are perceptions about subject matter; perceptions about self (self-concept); perceptions about other people; perceptions about the teaching task; and general frames of reference. These categories are translated into four areas of perception. Each area is rated using a Likert 7 point scale, with 7 being the most effective to 1 being the least effective. The following is a description of the category and examples of quotes from papers that received the various ratings.

Able/Unable

The able teacher sees students as having the capacities to deal with their problems. The teacher believes students or other people in the school community are able to find adequate solutions to events in their own lives. The unable teacher sees students as lacking the necessary capacities to deal effectively with their problems. The teacher doubts students' abilities to make their own decisions and run their own lives. If the teacher believes a student is able, the student will try to do his/her job to the best of his/her ability. If the teacher believes a student is unable, the student will often avoid responsibility.

1. No preservice teacher received a rating of 1 in this area. While some did not see their students as having a great number of abilities, they did mention at least some problem-solving skills.
2. "I believe this is a good rubric to implement for fourth grade assignments. It is easy for the students to read and understand their grade. This was an important artifact because it shows how the students were informed about their grades on the assignment, and they were aware of how their papers would be scored ahead of time." (This candidate discussed a rubric but gave no concrete information about the reasons for the specific sections of the rubric.)
3. "I enjoyed hearing what I thought and felt about the different topics and situations brought up in each interview. I was also impressed with myself because I learned that I could do it. I also was very happy to see that the interviewers seemed impressed with me as well. I received a lot of great, positive feedback, and I really have a strong feeling that something great is going to come out of it. I really cannot say enough about how much I enjoyed the experience." (Focused on her needs and abilities but nothing about how it will relate to students in practice.)
4. "As for future practice, I believe that this artifact can be used in many ways. First of all, if I am teaching 6th grade science, I can definitely use many ideas, activities, and instruction methods to teach about rocks and the Rock Cycle to my students. Secondly, even if I am not teaching about rocks to 6th graders, I can always use some of

the ideas for classroom management, adaptations for diverse learning needs, etc., no matter what the grade level and subject.”

5. “In the future, I would expand this lesson to collect similar data by using their family members at home. They are to calculate and present the data on a poster board to the class. This will be easily assessed by the accuracy of their data, how well their presentation went, and neatness of the board. It is individual, so no one could slack.”
6. “We recognized the need for each student to have the opportunity to share their findings with the rest of the group, so we created a circle and allowed each student to share the object they found and measured.”
7. “I chose this lesson as my artifact because I thought that it taught an important concept that children need to understand in a way that was fun and exciting to them. Because this lesson was done with very young students, they would have been confused if I had told them that an object’s density determines whether it will sink or float. I was able to introduce this topic in a way that made sense to them.”

Identified/Unidentified

The identified teacher relates easily with people, especially with people from diverse backgrounds. The unidentified teacher feels oneness only with those of similar belief and feels apart from all others. If the teacher feels a student can learn, then he/she will employ the most effective methods, as opposed to the teacher who makes materials for a general few and ignores the necessary adaptations that guarantee all students have access to the general education curriculum.

1. No preservice teacher had a number 1 rating in this area. Each preservice teacher detailed, or at least mentioned, effective methods.
2. “I believe that almost all of the other standards are covered in my artifact depending on how advanced the child with autism is in their schooling. Teachers of all content areas should provide opportunities for students to write, speak, listen, and view in both formal and informal settings.” (The candidate makes this statement but doesn’t connect it to specific examples or standards.)

3. “Looking at modern textbooks, the examples given seem to appeal mostly to white, middle-class students. We can see the same trends in the protagonists in literature. However, even after conducting interviews with just three students, diversity in the classroom is readily apparent.”
4. “Although school uniforms may not have direct effect on physical types of misbehaviors, it has a huge effect on the classroom atmosphere. It takes away the whole concern of students’ dress. There are no more mid-drifts, no more sagging pants, no mini-skirts, and no more cleavage. For me, the campus wear put students on the same level. Students can no longer judge one another for what name brand they may be or may be not wearing.”
5. “As I began teaching this lesson, I decided not to talk about the new colors created because the students were already so rambunctious and only concerned about the shadows that they were making, that I knew that they would not pay attention to the new colors concept. The important thing was that they learned about shadows.”
6. “I also read a letter that was written to Kobe Bryant and Shaquille O’Neal. The letter was written by a boy close to their age. He was trying to convince the two to stop arguing with one another and just play basketball. I then gave them possible subjects on which they might want to write about. They were not confined to these though. They could choose any subject that they wished.”
7. “This opportunity allowed me to experience scaffolding in a new light. It is an important part of meeting students where they are at in their learning versus making them come to where I want them to be without instruction. The lesson gave me an opportunity to practice various methods I have learned to build and link knowledge. I will implement this into my future lesson planning. That way I can reach all levels of students in the classroom.”

Larger/Smaller

The teacher identified as being larger has a global or broad perspective beyond immediate context. The smaller teacher has a very narrow focus on specific goals. The effective teacher understands the purpose of education is to have a long term, positive impact on a child’s growth

and development. The preservice teacher does not get sidetracked by one grade or homework assignment but can perceive the bigger picture.

1. There were no number 1 ratings. Preservice teachers would have to ignore any mention of the bigger picture and everyone mentioned something beyond the specific goals of the artifact.
2. “I love history so I will implement this subject as much as possible. There is much to teach and many important facts that our students must know so they do not make the same mistakes our ancestors did.” (This candidate doesn’t take into account the students who aren’t excited about history and also time constraints districts impose on teaching social studies.)
3. “I think this is an excellent idea for a lesson and I will use this activity in the future to help get family members involved in the classroom and their child’s learning. I would even invite some of the family members to come in and share their stories with the class to make this project more engaging and personal for the students in the future.” (This candidate is assuming that the students have family members that wish to be involved in the class.)
4. “After noticing that students had low interest in the topic of pollution, I incorporated the aspect of money to the lesson. This had a more direct effect on the students, increasing their interest and awareness of the issue.”
5. “The field trip to Piqua was a really good field trip for children to look at different exhibits and get a real life experience while learning information about Ohio’s history. Students all over should have this be one of their field trips they take in school. It is a fun, exciting way to learn information. The canal boat ride, tour guides in costume, and getting to walk through the building on John Johnston’s farm really allowed the students to understand how things were during this part of Ohio’s history.”
6. “Almost all of the lessons in the teaching guide included more than one subject area which is beneficial because interdisciplinary teaching is important in creating a relevant curriculum, teaching reasoning and critical thinking skills, and helping students transfer their learning to other aspects of their lives.”

7. “Throughout the lesson I asked the students questions that allowed the students to explore the subject at their own pace and according to their prior knowledge. I asked questions such as, ‘You say that living things move. What about a remote controlled car, it moves. Is it a living thing?’ This made the students think that maybe not all living things move.”

People/Things

The people teacher is concerned with the human aspects of day-to-day life. The attitudes, feelings, beliefs, and welfare of students and fellow community members are prime considerations in his/her thinking. The things teacher is preoccupied with all the impersonal, detail-oriented management aspects of education. The effective teacher is not a concrete thinker concerned with what is right in the school setting but instead focuses on what is appropriate for the individual or situation. The teacher focused on things as a first priority will put schedules and rules ahead of looking for the cause of the problem.

1. There were no number 1 ratings. Preservice teachers would have only mentioned things and never people. Everyone made at least some mention of the students involved.
2. “It was appropriate to use a rubric for this assignment so the students understood how their papers were graded. I will continue to use rubrics like this one in my future classroom because I think it is an important way for students to understand more about their assignment and their final grade on the assignment.” (The candidate only discussed the rubric and focused on the assessment tool and not students’ needs.)
3. “In the future I will probably use the book given to me to supplement lesson plans, such as writing about animals from history. I am a Language Arts and Social Studies major, and the focus of the book is more science based. However the book does have a section in which it shows how the lessons are related to topics other than science, which is great for a person like me who will not be teaching science.”

4. “In future use, I would do this assessment twice. Once at the beginning of the year to see what the students already know about using manipulatives and visual aides and once at the end of the year to see if they have learned to use these to aid in solving the problems. To make a noticeable observation the second time, I would use the school year to introduce the manipulatives and teach different ways of solving problems.”
5. “I feel that any time you add in the ‘fun factor’ you are setting your students up for success. This book and the center activities it describes have a fun look and feel that I am sure will be pleasing to the students and will help them remember what they learned from the center activities. In addition to introducing the center activities, covering learning across subject areas, connecting learning to things in our environment, and promoting cooperative learning, this book is something that just visually invites the students to learn more about the center activities.”
6. “Children need to have access to books if we as educators expect them to read. Perhaps, through a grant or community donations, children could receive free books on a regular basis; they could be distributed through schools, community centers, or public libraries. When I begin teaching, I will contact publishers, authors, and charities to obtain literature for my students. I will also make inquiries and requests to school administrators for funding classroom libraries.”
7. “Also, it will be important to get to know my students and gain their trust. I will use what I know about adolescents in general and my current students to plan curriculum that will be most beneficial for my class. Hopefully, these practices will help reduce the occurrences of bullying and ensure success for my students.”

Data Analysis

Analyses were conducted with SPSS for Windows, Version 16.0. In order to visualize data, we used Boxplots and then created ErrorBars. The error bars show the 95 percent confidence intervals (CI) for mean scores across the year. If 95 percent CI error bars do not overlap, we can be sure the difference is statistically significant ($P < 0.05$). However, the converse is not

true; we may or may not have statistical significance when the 95 percent confidence intervals overlap. In order to examine differences in participant dispositions over the year, we also performed a one-way repeated ANOVA test and descriptive analyses.

RESULTS

Cohorts Group Comparisons

We compared disposition mean scores of the whole group and the two cohort groups, early and middle. In the beginning of the program, the mean disposition scores of the middle childhood group tended to be higher than that of the early childhood group in all four categories. However, the mean disposition scores of the early childhood group tended to be higher than that of the middle childhood group by the end of the year in all four categories.

As can be seen in figure 5.1, participants in MCE showed a significant growth in disposition toward teaching and learning from July to October, a deep decrease from October to February, and a slight increase from February to April. Unlike MCE students, ECE students showed a slight decrease in dispositions toward teaching and learning for three quarters

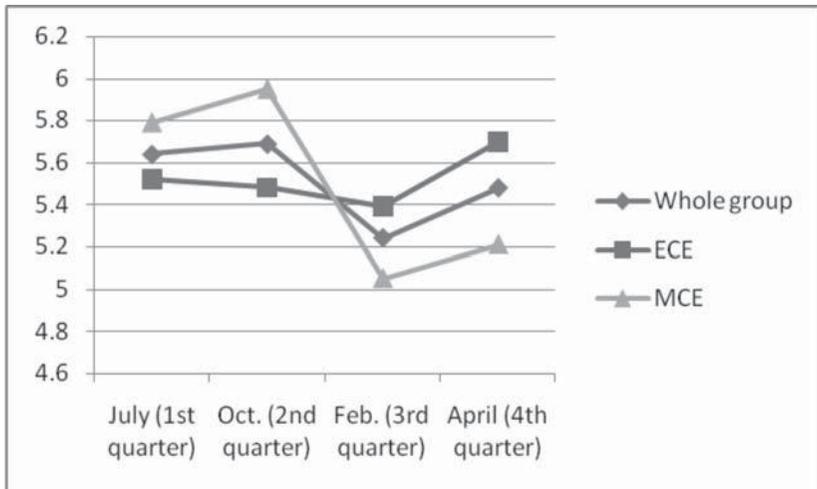


Figure 5.1. Average disposition mean scores.

and a significant increase from February to April. In February, both MCE and ECE student disposition mean scores showed the lowest scores, possibly due to preservice teacher physical exhaustion and anxiety. February is a chaotic time, when personal motivation becomes a difficult task, and there are higher level course work expectations. Preservice teachers left their role as a student at the end of February and began full-time teaching in their internship placement for the next 12 weeks. When preservice teachers started student teaching, they returned to a more reflective stance concerning their teaching performance and student learning, which was evidenced in the April disposition mean scores. That pattern was consistent within both the early and middle childhood cohorts. The consistency found among the early and middle childhood cohorts was aligned with the literature that suggests that educational cohorts frequently create a sense of common purpose, influence each other through social interaction, and individual and group development (Norris, Barnett, Basom, and Yerkes, 1996).

Categorical Comparisons

This section investigates how preservice teacher dispositions in four areas have changed over the fifth year in the program. In order to compare each disposition over time, we used one-way repeated ANOVA tests. The significance value for the Mauchly's test for all four disposition categories is greater than 0.05. So, it is reasonable to conclude that the variances of differences are not significantly different. We can assume that the condition of sphericity has been met, because Mauchly's test was nonsignificant. Therefore, we used the corrected value of Greenhouse-Geisser or Huynh-Feldt.

Identified/Unidentified Disposition

Figure 5.2 shows the 95 percent confidence intervals for mean scores for Identified/Unidentified dispositions across the year. The error bars for July and October do not overlap, which indicates a statistically significant ($P < 0.05$) difference in preservice teacher disposition about working with those from diverse backgrounds (Identified/Unidentified). However, the confidence intervals for October, February, and April overlapped. Un-

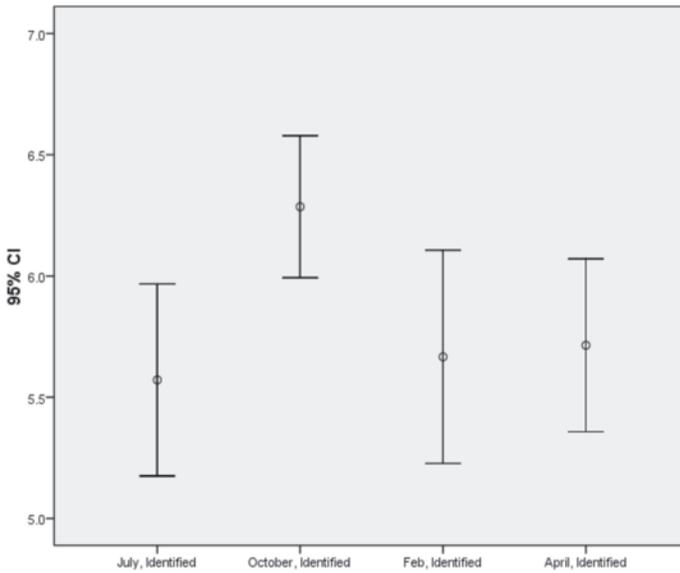


Figure 5.2. Identified/unidentified mean scores.

fortunately, we cannot conclude one way or another when the 95 percent confidence intervals overlap. This means that we may or may not have statistical significance in this case.

Therefore, we used a one-way repeated measures ANOVA test. Since the Huynh-Feldt and Greenhouse values are 0.864 and 0.927 (>0.75), we used the Huynh-Feldt corrected value. This correction F is significant, because its p value is 0.010, which is less than the normal criterion of 0.05. In this case, with the Greenhouse-Geisser correction applied, they are significant, and applying the Huynh-Feldt correction they are also significant. Clearly, these F 's represent the same sized effect; using both criteria they are significant. Given that the main effect was significant, we follow up the effect with post hoc tests. By comparing the difference between group means of the significance values, we could see that the significant differences between means occur between October and February and between October and April. No other differences are significant.

Able/Unable Disposition

In figure 5.3, the error bars for July and October do not overlap, which indicates a statistically significant ($P < 0.05$) difference in preservice

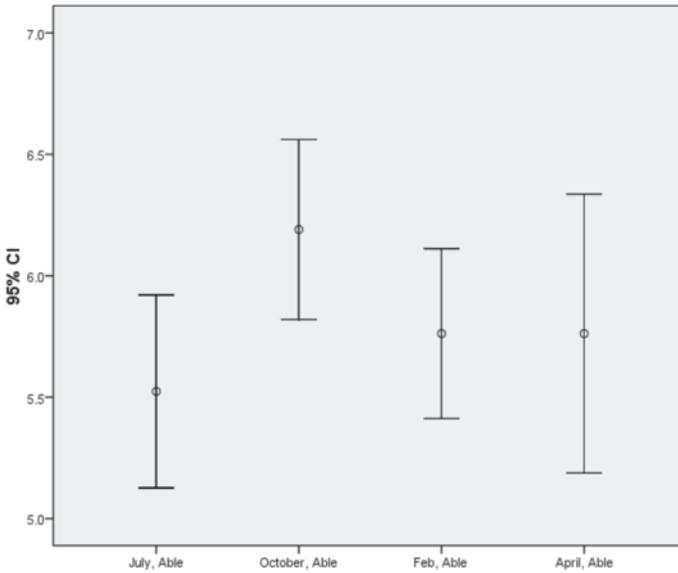


Figure 5.3. Able/unable mean scores.

teacher disposition toward believing in the ability of P-12 student to learn. However, the confidence intervals for October, February, and April overlapped. Again, we cannot conclude one way or another when the 95 percent confidence intervals overlap, meaning we may or may not have statistical significance.

The values of a one-way repeated measures ANOVA test show that regardless of which p-value we use, the results indicate that we have a statistically not significant effect of the 0.05 level. This result tells us that preservice teacher disposition in recognizing their students' ability did not change.

Larger/Smaller Disposition

Figure 5.4 shows the 95 percent confidence intervals for mean scores for the category Larger/Smaller across the year. The error bars for July, October, February, and April overlap. Again, however, we cannot conclude one way or another when the 95 percent confidence intervals overlap. We may or may not have statistical significance for the area concerned with the disposition of having a global perspective toward education.

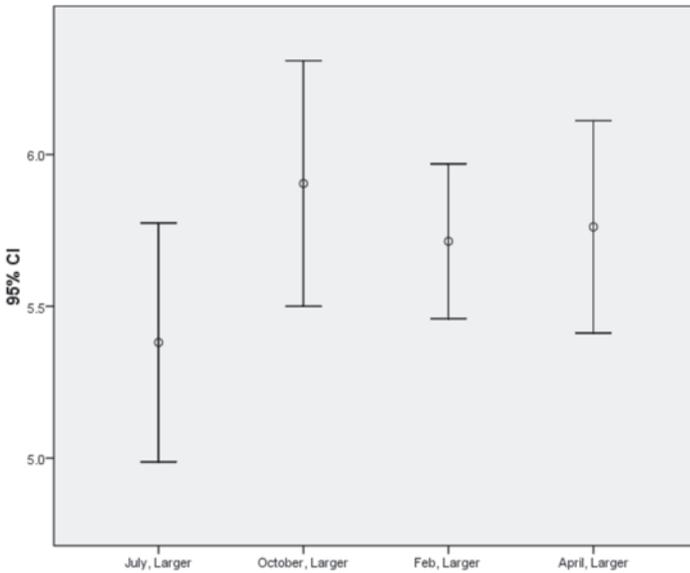


Figure 5.4. Larger/smaller mean scores.

The one-way repeated ANOVA test result shows that regardless of which p-value we use, the results indicate that we have a statistically not significant effect of a at the 0.05 level. In other words, preservice teachers' view toward education did not change for a year.

People/Things Disposition

Figure 5.5 shows the 95 percent confidence intervals for mean scores for the category People/Things throughout the year. The error bars for July, October, February, and April overlap, which means that we may or may not have statistical significance for the area concerned with the disposition toward helping the student versus managing the details.

Since the Huynh-Feldt and Greenhouse values are 0.946 and 1.000 (>0.75), we should use the Huynh-Feldt corrected value. This correction F is significant (p value = 0.037). In this case, with the Greenhouse-Geisser correction applied they are significant, and applying the Huynh-Feldt correction they are also significant. Clearly, these F's represent the same sized effect; using both criteria they are significant. Because the one-way repeated ANOVA test result was significant, we follow the effect up with

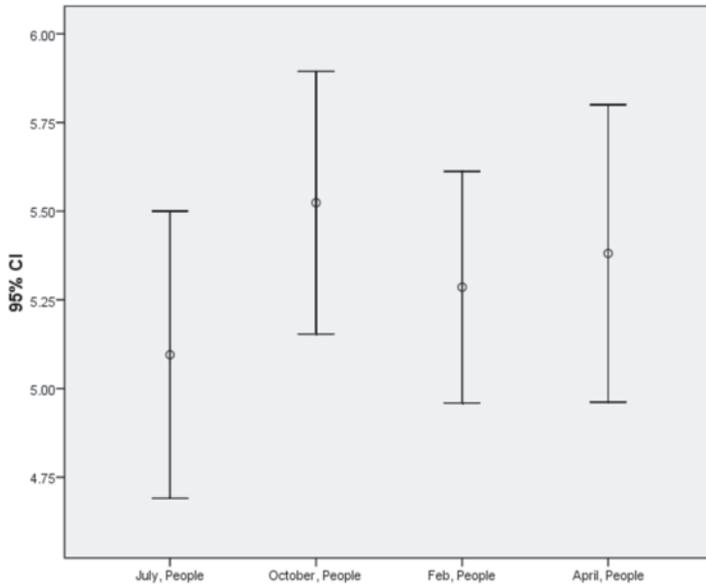


Figure 5.5. People/things mean scores.

post hoc tests. We found that the significant differences February mean score from mean scores in July and October. No other differences were significant.

DISCUSSION

A significant measure of success in teacher preparation is the preservice teachers' teaching and learning during their field experiences. If the program has done its job, then preservice teachers leave the program with a positive disposition toward teaching all students to the best of their ability and leave the program as practicing teachers with the skills to facilitate the most effective educational experience for all students in their school community.

The results of the study showed significant gain in only two of the four areas. Identified/ Unidentified and Able/Unable are focused more on what the teacher feels she can control. Because the program has made an effort to center their pedagogy and field experiences on helping the preservice teacher to feel capable at the end of the master's program, it was expected

that these areas would see growth. The two other areas of Larger/Smaller and People/Things require the preservice teacher to understand the value of the big picture. This is a much harder disposition to affect because personal beliefs held over a lifetime are difficult to modify.

Is it possible to affect a significant change in preservice teacher disposition toward the teaching profession? The authors believe it can be accomplished, but it will take a considerable collegial effort by faculty, staff, supervisors, and cooperating teachers. Faculty-instructors need to subscribe to a global perspective and design curriculum to challenge their students to embrace the humanistic aspects of teaching.

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Outcomes of Teacher Education Portfolios' Impact on Reflective Thinking

A Review of Discourses

Christie McIntyre and D. John McIntyre

ABSTRACT

Documentation of outcomes associated with teacher education portfolios and the quality of the reflections contained within the portfolios is sparse. As a result, this chapter reviews the literature and research base regarding standards-based portfolios and their impact on the reflective thinking of teacher candidates. The discourses regarding this topic were divided into two categories: theoretical discourses and practical discourses. The reviewed discourses reveal the strong potential for portfolios to promote reflective thinking with our teacher candidates. This is especially true if the portfolio is linked to state and national standards. Recommendations for further research on the relationship between portfolios and reflective practice conclude this chapter.

Theoretical support for teacher education portfolios is prevalent in professional literature; however, documentation of the outcomes of teacher education portfolios is sparse. In order to better understand the utility of teacher education portfolios, discourses regarding this topic were divided into two categories: practical discourses and theoretical discourses. Practical discourses focused on the processes used by researchers to determine levels of reflection, the outcomes attributed to the development of portfolios in teacher education programs, and the definition of terms commonly associated with portfolios in teacher education. On the other hand, theoretical discourses included the ability of portfolios to facilitate

reflection in teacher education and the epistemological development of teacher candidates.

PRACTICAL DISCOURSES ON PORTFOLIOS IN TEACHER EDUCATION

Practical discourses on teacher education portfolios commenced when researchers involved in Stanford University's Teacher Assessment Project (TAP) published their ideas for a portfolio process based on the National Board for Professional Teaching Standards. In 1998, Shulman discussed the inadequacies of teacher assessment at that time and proposed a "marriage of insufficiencies" (p. 40). It was his belief that the complex nature of teaching could only be captured in a portfolio and that it would enhance the "snapshot" obtained during observations of teachers.

Subsequent literature from the early 1990s suggested key questions for portfolio development, frameworks for the organization of portfolios, and the potential value of portfolios (Barton and Collins, 1993; Bird 1990; Wolf 1991). Bird asserted that teaching portfolios accurately portray the complexity of teaching, as well as the professional growth of its author. He described the need for a school culture that supports a formative assessment process where teachers would be comfortable sharing their strengths and weaknesses. He also noted the importance of a collaborative approach to completing a teaching portfolio.

Wolf (1991) extended Bird's discourse by sharing insights from a four-year study involving 40 teachers who completed portfolios based on their classroom experiences. Twelve questions were posed and issues were discussed as they were explored in the study. Each question is listed in table 6.1 with a quote from the author addressing how they chose to resolve the tension or issue. The significance of the Bird and Wolf articles is evident in the subsequent creation of the portfolio process for National Board for Professional Teaching Standards, as well as in the numerous references to their conceptual presentation of a teaching portfolio and to their definitions of key elements of a portfolio.

From the beginning, portfolios were viewed as vehicles for documenting self-assessment through reflection and the inclusion of authentic doc-

Table 6.1. Wolf's Issues in Design, Implementation, and Evaluation

What is a schoolteacher's portfolio?	"A container that displays evidence of a teacher's knowledge and skills based on multiple sources of evidence collected over time in authentic settings." (p. 130)
What purposes can a portfolio serve?	"To promote the development of individual teachers and to highlight exemplary practice." (p. 131)
What is important for teachers to document through their portfolios?	"Teaching is too complex to assess in its entirety. But cutting it into pieces destroys its integrity. . . . Teaching tasks should be meaningful and recognized by both teachers and the public as legitimate teaching activities." (p. 131)
What form should a portfolio take?	"It should include both actual artifacts of teaching and learning and their written reflections on the meaning of these classroom activities and products." (p.132)
What kinds of evidence should go into a portfolio?	Suggestive list of documents, videotape, audiotape, diagrams, and photographs.
How should the evidence in a portfolio be displayed?	They should be neat and legible, but the focus is on the content.
How should the portfolio entries be structured?	"To be explicit and directive about the form and procedure of documentation but permissive about the contents of the portfolio, giving teachers as much latitude as possible to make decisions about their teaching." (p. 133)
How much evidence is it necessary to include in a portfolio?	They took a "value-added" approach. What would be added to the readers' understanding by adding another artifact?
Should a portfolio represent a teacher's best work?	Yes.
Should a portfolio be a solo performance?	No. It should be a collaborative process.
How should a portfolio be evaluated?	"A portfolio is more coherent and informative when evaluated holistically." A team of trained people used a rubric to evaluate individual entries and the portfolio as an entire document.
What does a portfolio contribute that can't be achieved through other methods of teacher assessment?	"Portfolios enable teachers to document their teaching in an authentic setting and to bring in the context of their own classrooms in a way that no other form of assessment can." (p. 136)

uments. “Learning how to study and reveal one’s own teaching may be one of the most formidable challenges to the portfolio idea” (Bird, 1990, p. 249). Jarvinen and Kohonen (1995) noted that beginning teachers were able “to challenge and reconstruct their pre-existing beliefs, images and assumptions concerning teaching and the teacher’s role” (p. 31). A second outcome attributed to portfolios was the commitment to professional growth in a culture where reflection and collaboration became “habits of mind.”

Data from various studies revealed that teacher candidates were positive about the portfolio process at the end of their programs. They stated that portfolios enhanced their reflection on their practice (Borko et al., 1997; Wenzlaff and Cummings, 1996) and that they perceived evaluation as a collaborative process (Winsor, Butt, and Reeves, 1999).

Zidon (1996) identified three stages of portfolio development based on the feedback received from her study. The candidates’ initial reaction to the portfolio was described as a “stage of frustration.” Some teacher candidates were overwhelmed by the task and others put it aside for another day. They requested guiding questions for reflections, a defined structure, more opportunities to collaborate, examples from peers, and more time to develop their portfolios (Borko et al., 1997; Winsor et al., 1999). The second phase was described as a “stage of exploration.” As candidates sorted through the artifacts and chose those that represented what they had learned, they began to see education as a process. In the end, teacher candidates viewed the portfolio as a “rite of passage,” hence the final stage, the “stage of demonstration and celebration” (p. 64).

Following the plethora of literature describing elements of teacher education portfolios in the late 1990s, researchers began to note the importance of providing detailed information about the contextual requirements for portfolio development prior to reporting any findings associated with particular elements. Zeichner and Wray (2001) suggested that future research address five critical dimensions of portfolio development: variations in purpose, ownership of the portfolio, organization of the portfolio, opportunities to collaborate, and presentation of the portfolio. Carney (2004) also suggested that teacher educators begin to report outcomes associated with portfolio development in addition to describing the elements that comprise a portfolio.

Since 2000, the ability of the portfolio to facilitate reflective thinking in preservice teacher candidates has been an emerging focus. For example Smith and colleagues (2001) conducted a study that collected qualitative data in order to document how portfolios assess preservice teacher learning objectives and P-12 student learning outcomes, while also promoting reflective and collaborative practice. In addition, Carney and Jay (2002) examined how portfolios functioned as tools for knowledge representation and reflective thinking.

Other questions have focused on how portfolios might contribute to the assessment and professional development of prospective teachers. Dutt, Tolerico, and Kayler (1997) were interested in whether or not teacher candidates and cooperating teachers used the portfolio as an assessment of the teacher candidate's professional development. Delandshere and Arens (2003) examined the quality of evidence presented in preservice teacher portfolios at three different universities and the inferences drawn from them. Finally, Hartmann (2004) looked at how portfolios impacted the experiences of students in his methods course, as well as his experiences as a course instructor.

The last 15 years have shown a progressive understanding of the definition and use of portfolios in teacher education. In 1994, Shulman defined a teaching portfolio as "the structured documentary history of a (carefully selected) set of coached or mentored accomplishments substantiated by samples of student work and fully realized only through reflective writing, deliberation, and serious conversation" (Lyons, 1998, p. 3). While this definition continues to serve as a standard in the research and literature on portfolios, the implementation of this definition is varied. This variation was most apparent in the latter half of the 1990s, when most of the literature described key elements of portfolios. In agreement with Shulman's definition, most teacher education portfolios included artifacts from the teacher candidate's experiences and were accompanied by reflections; however, this is where the similarities ended. The process for developing the portfolio varied greatly among institutions and is discussed later in this review.

The last five years show movement toward outcomes associated with the teacher education portfolio. Teacher educators are asking whether or not the portfolio positively impacts the professional development and re-

flectivity of teacher candidates. Accrediting bodies are exploring the use of portfolios as an assessment tool for program assessment and national organizations are promoting the use of professional standards as a conceptual framework for portfolios. For some teacher educators, this progression seems practical and well substantiated by theoretical discourses; however, some teacher educators are still questioning the usefulness of portfolios as a credible tool for assessing teacher candidates. The following section presents theoretical discourses that provide a foundation for the use of portfolios.

THEORETICAL DISCOURSES: CONNECTING TO THE CONCEPTUAL FRAMEWORK

Theoretical discourses focus on reflection in teacher education and the epistemological development of teacher candidates.

Reflection in Teacher Education

Education theorists of the twentieth century proclaimed the importance of reflecting on the act of teaching as an avenue for improved practice in the classroom. Dewey dedicated an entire book to the topic as early as 1933, and Schön (1987) applied his theories of reflection to the way students resolve problems within their disciplines. An understanding of the contributions of these theorists substantiates reflection as an integral component of the teaching and learning process.

Dewey was concerned with the routine actions of teachers in the classroom and he promoted reflective action as the “active, persistent, and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusions to which it tends” (1933, p. 9). Routine actions were the daily activities and lessons that teachers employed without giving thought to the consequences of such lessons. For example, a teacher chooses to use a behavior management system that involves giving children candy for correct responses because the teacher down the hall uses the same system. Applying Dewey’s definition of reflection would require the teacher to question the immedi-

ate and long-term effects of rewarding children to behave and to consider which theory supports her actions.

Teacher education portfolios also can be categorized as either routine acts or reflective acts. Some programs require teacher candidates to include a prescribed list of artifacts, so the process becomes a routine act for the teacher candidate. Other programs require teacher candidates to choose the artifacts from meaningful experiences they have had in courses and in field placements. While both programs may ask teacher candidates to include rationales with their artifacts, only the latter is an example of Dewey's reflective action. When teacher candidates defend why they have chosen an artifact as an example of their personal beliefs, they are engaging in reflective thought.

Schön (1987) differentiated reflection-in-action and reflection-on-action when describing how the professional intuitively responds to familiar situations by making continuous decisions with little forethought; however, when the professional encounters an unexpected event, he is faced with a decision to either ignore or respond to the unexpected. If the professional pauses to consider the alternative outcomes associated with future actions, he is reflecting-in-action. Another option is for the professional to look back upon how his actions led to an unexpected outcome, which Schön referred to as reflection-on-action.

When faced with a problem during the course of a day, a teacher candidate may resolve the issue at the time that it occurs and this was referred to as reflection-in-action. However, if the teacher candidate considers the consequences of her actions at a later time, then she is demonstrating reflection-on-action. So, reflections written for portfolio artifacts would be considered reflections-on-actions.

Many teacher educators agree that reflection-on-action is a critical element of the student-teaching semester and assign supervisors to observe and respond to the progress of the teacher candidate. However, they often overlook another principle in Schön's theory, which stated that the learner benefits most when she/he has "named and framed" the problem or issue to be resolved. Allowing teacher candidates to choose their artifacts for the portfolio empowers them to own the learning that occurs. When they *name* the artifact, it is easier for them to *frame* the rationale. The following quote from Dewey (1959) supports Schön's theory by implying that

learning resides with the learner, not with the instructor or the content area.

Learning is active. It involves reaching out of the mind. It involves organic assimilation starting from within. Literally, we must take our stand with the [learner] and our departure from him. It is he and not the subject-matter which determines both quality and quantity of learning. (p. 95)

Yet, ownership of the portfolio is continually debated among teacher educators. Those who view the portfolio as a tool for program assessment state that artifacts should be predetermined by the program, not chosen by the student.

Epistemological Development of Teacher Candidates

Adult development is an important construct to consider when seeking greater understanding of the professional development of teachers and teacher candidates. Sprinthall, Reiman, and Theis-Sprinthall (1996) shared research that connected stage theories of development to the behaviors of teachers and counselors. In their review of the literature, they referenced a study by McKibbin and Joyce (1983) where teachers, engaged in a series of workshops on innovative strategies in the classroom, varied in their implementation of the strategies. They concluded that variation in implementation was directly related to the teacher's stage of development. Higher-stage teachers implemented innovative strategies, whereas "lower-stage teachers resisted and virtually failed to employ any but the most simple and concrete methods" (Sprinthall et al., p. 676). A meta-analysis of 60 studies that used the Hunt Conceptual Systems Test found that higher-stage teachers demonstrated the following behaviors: (1) a reduction in prejudice, (2) greater empathic communication, (3) greater focus on internal control, (4) longer decision latencies, (5) more flexible teaching methods, (6) more autonomy and more interdependence, and (7) superior communication and information processing (Miller, 1981).

Literature on intellectual development often begins with the contributions of Jean Piaget. His explanations of *structural organizations*, *developmental sequences*, and *interactionism* serve as a foundation within

developmental psychology (King, 1978). Structural organizations are the scheme we use to make sense of our world. As we participate in life, our prior experiences serve as a filter for incoming stimuli. We either assimilate the new stimuli into an existing thought pattern or accommodate the new stimuli by altering our thought patterns. The developmental sequence is characterized by qualitative change in stages of cognition. Early stages of development establish the architecture for subsequent elaborations and understandings. Change is evoked through our interactions within our world. Without cognitive dissonance, we would remain at our current stage of development.

William Perry followed Piaget with a theory of intellectual and ethical development based on his longitudinal study of college males at Harvard University (King, 1978). Perry identified nine positions that young adults move through as their understanding of the nature of knowledge changes. The nine positions are grouped into four categories. *Dualism* (positions 1 and 2) describes an individual who perceives knowledge to be right or wrong or absolute. The second category is *multiplicity* (positions 3 and 4). During this stage, the young adult acknowledges that multiple perspectives exist and strives to accommodate all opinions without judgment. *Relativism* (positions 5 and 6) indicates an awareness of the impact context can have on someone's perspective. Multiple perspectives are valued differently. The final three positions (7, 8, and 9) indicate a shift in the theory from epistemological development to moral, ethical, and identity development. The final category is *commitment in relativism*. At this point, the individual recognizes his/her place within a pluralistic society and chooses to commit to a personal identity consistent with what he/she values (Belenky, Clinchey, Goldberger, and Tarule, 1986).

King (1978) developed an open-ended interview protocol to explore how adults make judgments and how experts influence these judgments. From their work with the Reflective Judgment Interview, they defined seven stages of development that are listed in table 6.2. Similarities in Perry's Scheme and the Reflective Judgment Model can be seen in the descriptions of the stages. Each moves from a state of absolutes to one of contextual beliefs based on personal inquiry and credible evidence.

Using the work of Piaget, Perry, and King and Kitchener, Baxter Magolda (1988) developed the Measure of Epistemological Reflections

Table 6.2. King and Kitchener's Reflective Judgment Model

Stage 1	Knowing is limited to single concrete instances
Stage 2	Two categories for knowing—right and wrong answers are contrasted
Stage 3	Knowledge is uncertain in some areas and certain in others
Stage 4	Concept that knowledge is unknown in several specific cases leads to abstract generalization that knowledge is uncertain
Stage 5	Knowledge is uncertain and must be understood within a context; thus it can be justified by arguments within those contexts
Stage 6	Knowledge is uncertain but constructed by comparing and coordinating evidence and opinion on different sides of an issue
Stage 7	Knowledge develops probabilistically through a process of inquiry that is generalizable across domains

(MER). In her book *Assessing Intellectual Development* (1988), she described how the theories mentioned above influenced the development of MER, shared research studies that validated the study, and provided a manual for scoring the protocol. Baxter Magolda designed an interview protocol to assess the intellectual development of undergraduate students enrolled in a four-year institution. Her longitudinal study (2001) involved annual interviews of students beginning their freshman year. At the conclusion of her 12-year study, she had maintained contact through the annual interviews with 89 participants.

Baxter Magolda (2001) described four ways of knowing: absolute knowing, transitional knowing, independent knowing, and contextual knowing. Absolute knowing was characterized by unquestionable belief in absolutes and authority figures. Transitional knowing was assigned to individuals who began to recognize that multiple perspectives may be presented for a single event. The independent knower shunned all absolutes and believed in a relative world. The contextual knower respected the plurality existent in multiple explanations, but considered the credibility of the evidence presented as a determining factor for knowing what to believe.

Her most recent work, *Making Their Own Way* (2001), suggests that a more constructivist approach to higher education could have a positive impact on the developmental stages of undergraduate and graduate students. She described her theory of self-authorship as “the ability to collect, interpret, and analyze information and reflect on one’s belief in

order to form judgments” (2001, p. 143). She noted that self-authorship required change in learners’ beliefs about knowledge construction, their sense of self, and their interactions with others. Her three core assumptions of self-authorship are “(a) knowledge is complex, ambiguous, and socially constructed; (b) an internal sense of self is central to effective participation in the social construction of knowledge; and (c) expertise or authority is shared among learners and teachers as they mutually construct knowledge” (p. 143).

Practical Discourses on Reflection

While theoretical discourses provide a broad understanding of the ideals, practical discourses demonstrate how theories are categorized and used by practitioners. As stated previously, Dewey (1933) distinguished routine action from reflective action with the implication that thoughts and behaviors can be viewed from two perspectives. Schön (1987) also proposed different categories for types of reflection. His work distinguished reflection-in-action from reflection-on-action. These two propositions are the foundation for more defined categories or attributes of reflection.

Van Manen (1977) presented three levels of reflectivity that evolved from three traditions in research. Level 1 was a product of the empirical-analytical tradition that emphasized “technical application of educational knowledge and of basic curriculum principles for the purpose of attaining a given end” (p. 226). The technician reflects on efficient and effective methods that achieve predicted outcomes. The second level of reflectivity evolved from the phenomenological-hermeneutic tradition that allowed for the interpretation of problems through communication prior to action. The interpreter seeks opportunities to dialogue as he/she reflects on the justifications for noted actions or problems. Van Manen’s third level of reflectivity was in response to traditions in critical theories that addressed broader normative problems aimed at “emancipatory practical action, self-determination, and liberation” (p. 226). The critic reflects on a normative society devoid of inequality and liberated from oppressive domination by authorities and institutions. Van Manen’s levels of reflectivity are used by educators to understand teacher candidates’ orientations as they reflect on their coursework and field experiences.

Zeichner and Liston (1996) describe attributes of reflective practitioners as they distinguish a reflective practitioner from a technician. “The technician accepts reality as it is presented, does not question personal assumptions, and responds to situations without considering the context” (McIntyre, 2002). Zeichner and Liston attributed the following qualities to the reflective practitioner:

1. examines, frames, and attempts to solve the dilemmas of classroom practice,
 2. is aware of and questions the assumptions and values he or she brings to teaching,
 3. is attentive to the institutional and cultural contexts in which he or she teaches,
 4. takes part in curriculum development and is involved in school change efforts,
 5. takes responsibility for his or her own professional development.
- (p. iv)

The Framework for Reflective Pedagogical Thinking by Sparks-Langer, Simmons, Pasch, Colton, and Starko (1990) was developed to assess the reflections of teacher candidates enrolled in a teacher education program designed around principles of reflection by van Manen and Schön. Teacher candidates were interviewed weekly and asked to reflect on successful and unsuccessful teaching episodes and to note any issues that came to mind as they reflected. Interview transcripts and journal entries were coded using the Framework for Reflective Pedagogical Thinking, which entails seven levels of reflection (see table 6.3). The first two levels resemble the techni-

Table 6.3. Framework for Reflective Pedagogical Thinking

Level 1	No descriptive language
Level 2	Simple, layperson description
Level 3	Events labeled with appropriate terms
Level 4	Explanation with tradition or personal preference given as the rationale
Level 5	Explanation with principles or theory given as the rationale
Level 6	Explanation with principle/theory and consideration of contextual factors
Level 7	Explanation with consideration of ethical, moral, political issues

cian described by van Manen; levels 4, 5, and 6 resonate with van Manen's interpreter seeking to justify actions and problems; van Manen's final stage of reflection, the critical reflection, is evident in level 7.

RESEARCH ON UNDERGRADUATE TEACHER EDUCATION PORTFOLIOS

Carney's (2004) review of literature found very few studies that met standards for exemplary research when seeking empirical evidence citing the effects of portfolios. She used two notable frameworks (Zeichner and Wray, 2001; Herman and Winters, 1994) as a guide in her assessment of more than 200 research articles. She found 22 empirical studies worthy of further consideration and recommended that future research use a systematic approach when reporting the effects of portfolios.

This section includes findings from 5 of the studies noted in Carney's (2004) review of research, as well as from 15 studies not mentioned in her work. The five Carney studies were selected because the participants were either preservice teachers or beginning teachers. The remaining studies discussed were also selected because the participants were preservice teachers.

Epistemological Development

Epistemological development refers to an understanding of the nature of knowledge and how it is attained (Knight, 1998). Carney and Jay's (2002) study asked, "How do electronic and traditional portfolios function as tools for teacher knowledge representation?" (p. 3). They found that teacher candidates' portfolios demonstrated varying levels of pedagogical content knowledge. In other words, some had a more extensive repertoire for applying their knowledge of the content to curriculum planning. While Carney did not compare these variations to stages of development, it would be interesting to see if there was evidence of Baxter Magolda's (2001) Four Ways of Knowing in the portfolio artifacts. A second finding from Carney and Jay's study could be directly linked to Baxter Magolda's work on self-authorship. They reported that portfolios helped teacher candidates to

conceptualize themselves as teachers. “An internal sense of self is central to effective participation in the social construction of knowledge” (Baxter Magolda, 2001, p. 195). Jarvinen and Kohonen (1995) also found that the professional identity of teacher candidates was enhanced through the portfolio process.

Most of the authors did not specify epistemological development as a focus for their research; however, there were several places where it was a stated outcome associated with the portfolio process. Dutt, Tallerico, and Kayler (1997) stated that the portfolio promoted a collaborative approach to the teacher candidates’ development, rather than a hierarchical approach where all knowledge resided with the cooperating teacher. Again, this supports one of Baxter Magolda’s (2001) core indicators for moving toward self-authorship. Teacher candidates in Zidon’s 1996 study discovered that “intellectual and professional development is a process, that there is a lot more to learning than just information” (p. 64). In addition, two authors reported that teacher candidates had a better understanding of the complex nature of teaching after completing their portfolios (Winsor et al., 1999; Zidon).

Certain factors were associated with the findings related to epistemological development. Carney and Jay (2002) recommended that portfolio artifacts needed to be grounded in practice to impact knowledge and reflection. Hartmann’s (2004) portfolio feedback loop enabled him to target “pedagogical interventions that responded to particular teachers’ portfolio artifacts” (p. 402). Central to all of these findings was the emphasis placed on reflection within the portfolios.

PORTFOLIO REFLECTIONS

Most of the authors noted that portfolio reflections contributed to teacher candidates’ professional development (Borko et al., 1997; Carney and Jay, 2002; Dutt et al., 1997; Jarvinen and Kohonen, 1995; Smith et al., 2001; Winsor et al., 1999; Woodward and Nanlohy, 2004; Zidon, 1996). Through the portfolio process, teacher candidates were able to connect their beliefs to their practices (Borko et al.; Hartmann, 2004). This finding supported Dewey’s (1933) definition of reflection: “active, persistent, and careful consideration of any belief or supposed form of knowledge in the

light of the grounds that support it and the further conclusions to which it tends" (p. 9). Portfolio reflections lead to a synthesis of learning (Dutt et al., 1997). Woodward and Nanlohy found that as teacher candidates selected content for their portfolios, they developed a deeper understanding of the content, which supports Schön's (1987) theory for *naming and framing* issues.

While reflection appeared to be an assumed component of the portfolio process, none of these studies analyzed levels of reflection nor did they address stages of epistemological development. Is it sufficient to state reflection as an outcome of the portfolio process? The findings from one study, Delandshere and Arens (2003), found that the portfolios lacked evidence of critical or reflective thought, even though the teacher candidates reported that it caused them to think more critically about their practice. Future research needs to be more explicit about the nature of the learning that occurred for the teacher candidate.

SUMMARY

Zeichner and Wray (2001) suggested that future researchers ask, "What is the nature and quality of reflection that is promoted under different conditions of portfolio use and what is the specific quality of the assessments that one can make of teaching with the aid of teaching portfolios under particular conditions?" (p. 620). Given the rich history of reflection with Dewey, Schön, van Manen, Zeichner, and Liston, it almost seems obligatory to consider their schemas in the analysis of teacher candidates' portfolios.

Zeichner and Wray's (2001) second implication for future research was to examine the conditions of portfolio use and how those conditions impacted the subsequent assessments made by teacher educators. Most of the reviewed studies provided information regarding the conditions of portfolio use evident in the sections on Zeichner and Wray's critical dimensions. The recommendations pertaining to the critical dimensions suggested that teacher candidates wanted clear guidelines, more structure, more peer collaboration, more time, more models, and for all faculty members to be involved in the portfolio process. The researchers also noted a need for guiding questions to focus teacher candidates' reflections.

Only two studies examined how portfolios were used for assessment. Dutt and colleagues (1997) found that portfolios helped teacher candidates organize and focus their thinking and that by facilitating communication between the cooperating teacher and the teacher candidate the portfolio helped them track teacher candidates' progress. Delandshere and Arens (2003) looked at the inferences drawn from the portfolios and found that faculty evaluations were based on tacit knowledge of the teacher candidate rather than concrete evidence. They suggested that this superficial assessment was due to a standards-based approach to the portfolio's organization. While we respect the need for teacher candidates to develop a more holistic view of education, we would have linked the superficial assessment to a lack of rigor in the expectations for teacher candidates' reflections since they were only asked to label artifacts and were not expected to do more.

In reviewed research, there was no evidence of any epistemological models being used to better understand the portfolio outcomes associated with nature of knowledge and how knowledge was constructed. Using Baxter Magolda's heuristic as a final lens can provide a more in-depth view of the quality of teacher candidates' reflections. This proposed merger of epistemological discourses and practical portfolio discourses will be meaningful to future researchers as they grapple with ways to analyze and interpret the data they collect from TEP portfolios.

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What We Know and Don't Know about Teacher Reflection

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ABSTRACT

Most teacher education programs embrace the goal of preparing teachers who will engage in reflective practice. Yet, what constitutes an effective program design to cultivate reflective practice remains elusive, with pathways to advancing reflective practice difficult to chart. This chapter discusses the challenges teacher educators face in attempting to facilitate the development of reflective practitioners as well as research-based learning task structures and other vehicles conducive to promoting reflection.

INTRODUCTION

The need to prepare teachers who will be reflective practitioners has gained wide acceptance, increasingly being adopted as the standard to aspire to across numerous professions and borders. Many view the development of reflective practice as the hallmark of professional competence for teachers (e.g., Cole and Knowles, 2000; Hatton and Smith, 1995; Jay, 2003; Larrivee, 2006a; Osterman and Kottkamp, 2004; Reagan, Case, and Brubacher, 2000; Schön, 1983; Smyth, 1992; York-Barr, Sommers, Ghore, and Montie, 2006; Zeichner and Liston, 1996).

Dewey (1910/1933, 1938) first put forward the notion of reflective practice nearly a century ago, asserting that reflective thinkers not only

critique current conclusions but they also acknowledge that resulting decisions should remain open to ongoing inquiry and reformulation. Later, Schön (1983, 1987) popularized the term *reflective practitioner* in contrast to the then reigning portrayal of teacher as *technician*. Schön proposed that reflective practitioners continually learn from their experience, reconstructing experience through reflection.

Standards for teacher education and continued professional development in many countries now advocate that teachers be reflective practitioners. At the same time, escalating pressure to be accountable for students reaching imposed standards of performance increases the likelihood of teachers using teaching strategies that prioritize efficiency and expediency that may come at the expense of ongoing reflection on teaching practices. Such demands can leave teachers feeling powerless. However, the best antidote for feeling like mere pawns in the system is for teachers to take control of their teaching lives by developing the habit of engaging in systematic reflection about their work.

DEFINING REFLECTIVE PRACTICE

Throughout the literature the term *reflection*, and consequently *reflective practice*, has been used to describe practices ranging from analyzing a single aspect of a lesson to considering the ethical, social, and political implications of teaching practice. Practice is one's repertoire of knowledge, dispositions, skills, and behaviors. The term *reflective practice* refers to the on-the-job performance resulting from using a reflective process for daily decision making and problem solving (Larrivee, 2008a). This expansive range of meanings makes it difficult to decipher research findings and has led to attempts to further explicate dimensions of reflection. References to numerous levels and stages of reflection are indicative that reflection is generally viewed as an incremental process.

The earliest attempt to define levels or types of reflection was done by van Manen (1977), who proposed a hierarchical representation of three levels labeled *technical*, *practical*, and *critical reflection*. Authors subsequently attempting to label levels of reflection have frequently used van Manen's terms as a starting point for devising their own categorization systems.

Based on an extensive review of the literature, the various definitions evolving over several decades most commonly depict three distinct levels of reflection (e.g., Day, 1993; Farrell, 2004; Handal and Lauvas, 1987; Jay and Johnson, 2002; Larrivee 2008b; van Manen, 1977). The three levels are:

1. An initial level focusing on teaching functions, actions, or skills, generally considering teaching episodes as isolated events;
2. A more advanced level considering the theory and rationale for current practice; and
3. A higher order examining the ethical, social, and political consequences of teaching.

For the initial level, the term *technical* has been used most (Day, 1993; Farrell, 2004; Hatton and Smith, 1995; Schön, 1983; Valli, 1997). It has also been referred to as *descriptive* (Jay and Johnson, 2002) and as *surface* (Larrivee, 2008b). The next level of reflection has been variously labeled *practical* (van Manen, 1977), *theoretical* (Day, 1993), *pedagogical* (Larrivee, 2008b), *deliberative* (Valli, 1997), *comparative* (Jay and Johnson, 2002), and *conceptual* (Farrell, 2004). For the next level of reflection, the term *critical reflection* has consensus in the literature as a level of reflection examining the ethical, social, and political consequences of one's practice. It involves examination of both personal and professional belief systems.

Many advocates of reflective practice take the position that teachers should not only reflect on behaviors and events within the confines of the classroom but should also include the influence of larger social and political contexts (Bartlett, 1990; Cole and Knowles, 2000; Handal and Lauvas, 1987; Jay, 2003; Larrivee, 2000; Osterman and Kottkamp, 2004; Parker, 1997; Reagan, Case, and Brubacher, 2000; Schön, 1987; Smyth, 1989). They deem teaching as ultimately a moral pursuit concerned with both means and ends and therefore consider critical reflection to be imperative for teaching in a democratic society.

Acknowledging that classroom and school practices cannot be separated from larger social and political realities, critically reflective teachers strive to become fully conscious of the range of consequences of their actions. Although the developmental span for both prospective and practicing

teachers will vary considerably, it is important for teachers to progress through the levels of reflective practice to ultimately become critically reflective teachers who pose the important questions of practice.

THE CHALLENGE OF FACILITATING THE DEVELOPMENT OF REFLECTIVE PRACTICE

Teacher educators will need to pay particular attention to the way they construct learning experiences to foster the capabilities and attributes that distinguish reflective practitioners. Research indicates that even with interventions specifically designed to enhance reflection many attempts fail (e.g., Korthagen and Wubbels, 1991; Smith and Hatton, 1993; Tillema, 2000; Valli, 1992). Despite exposure to specific scaffolding intended to develop reflective practice, reflections of preservice teachers tend to be mostly descriptive, failing to connect them to a theoretical framework or societal issues (e.g., Collier, 1999; Pultorak, 1993; Wunder, 2003). The conventional wisdom is that without carefully constructed guidance novice teachers seem unable to engage in pedagogical and critical reflection (e.g., Brownlee, 2003; Conway and Clark, 2003; Jones and Vesilind, 1996; Mena Marcos, Sanchez, and Tillema, 2008; Ward and McCotter, 2004).

Preparing reflective practitioners challenges the traditional higher education “stand and deliver” model, calling for movement away from a *trainer* perspective toward a *learning facilitator* and *social mediator* perspective. Trainers see themselves as responsible for the development of predetermined skills and outcomes. In contrast, facilitators or mediators provide a guiding structure for a discovery process. Acting in this role requires educators to become aware of their own thinking process and to trust the group’s ability to come up with their own solutions and applications by engaging in a meaningful learning process. As Day (1993) suggested, they must become “skilled helpers, critical friends, and trusted colleagues.” In essence, they must be reflective practitioners themselves, capable of remaining open to different viewpoints and letting go of the need to be right (Amobi, 2006; Larrivee, 2008a; Russell, 2005).

Establishing a Supportive Learning Community

It is essential that teacher educators establish a supportive learning community for developing teachers to question the goals, beliefs, and assumptions that guide their teaching. Teaching is a complex and personal expression of multiple and varied forms of knowledge and knowing. Much of what teachers do is implicit, hidden from the practitioner, but observable by others. An individual teacher's thinking needs to be confirmed, modified, or stimulated to deeper levels of understanding by reflecting "aloud." A major purpose of reflective practice is to test for the presence of assumptions and biases in the information one accesses. The checks and balances of peers' and critical friends' perspectives can help developing teachers recognize when they may be using self-confirming reasoning to weigh evidence with a predisposition to confirm a belief or theory rather than considering alternative theories that are equally plausible.

Although advocates of reflective practice emphasize starting with one's personal experiences, they also stress the importance of critical analysis and reformulation of that experience. While acknowledging the importance of experience, it is also necessary to recognize that experience is not pure, it is culturally and personally "sculpted." Individuals often develop habits, biases, and presuppositions that tend to close off new ways of perceiving experiences.

Defining reflection as only an activity to be pursued by an individual greatly limits its potential for personal growth. Many attest to the important role of a collaborative process in developing reflective practice (Bright, 1996; Cole and Knowles, 2000; Jay, 2003; Loughran, 2002; Osterman and Kottkamp, 2004; Rodgers, 2002; Valli, 1997; York-Barr, Sommers, Ghore, and Montie, 2006; Zeichner and Liston, 1996). Others believe that an optimal means for encouraging critical reflection is through communities of peers engaged in facilitated dialogue (Achinstein, 2002; Boler, 2004; Brookfield, 1995; Grossman, Wineberg, and Woolworth 2001; Larrivee, 2000; Shor, 1992; Smyth, 1989, 1991). Structured conversations with peers can open up new ways of seeing things leading to insights into teaching and learning (Brookfield and Preskill, 2005; Burbules, 1993; Putnam and Borko, 2000).

A major purpose of reflective practice is to test for the presence of assumptions and biases in the information one accesses. Ideally, a support

group or critical friend provides a safe haven to be vulnerable, admit mistakes, and ask for help. Their function is not only to empathize with others' dilemmas but also to point out incongruences in practice and fallacies in thinking. Individuals construct their own meaning and become partners in helping others do the same.

According to Brookfield (1995), engaging in respectful yet critically rigorous conversations with peers who have the same challenges offers an ideal chance for critical reflection on practices. Collaborative dialogue helps teachers become aware of how much they take for granted in their own teaching and how much of their practice is judgmental.

Conversation is truly critical only when participants approach it with certain predispositions. Authentic dialogue is probably the single greatest learning tool for the development of reflective practice (Larrivee, 2009). Teacher educators will need to arrange conditions for dialogue by devoting time to evolving ground rules with participants in order to create critical conversations that are insightful, respectful, and inclusive. Developing the capacity for authentic dialogue requires teacher educators to strategically structure conversations to foster empathic and nonreactive listening, to suspend judgments, and to reveal assumptions.

Challenging Beliefs

Teacher educators must challenge developing teachers to confront deep-seated personal beliefs about teaching and learning. The reflective process leads to examination of beliefs, embodied in the assumptions teachers make and the expectations they have for students. Beliefs create the lens through which teachers view their worlds, shaping their identity. Beliefs about students' capacity and willingness to learn, assumptions about the behavior of students, especially those from different ethnic and social backgrounds, and expectations formulated on the basis of a teacher's own value system drive teacher behavior. Beliefs are also subjective and arouse an emotional response. Providing openings to recognize the possibility of error even in the most cherished beliefs is vital to fostering reflection.

Reflection is an abstract construct with its existence being assumed on the basis of observed performance and expressed beliefs. Focusing on what prospective teachers already know and believe about their profession has proven to be a useful starting point. The underlying assumption is

that years of their own classroom experience in the role of learner exerts a powerful influence on beliefs about teaching (Bryan, 2003; Smyth, 1992). The resulting implicit belief system acts as the filter through which new knowledge, ideas, and experiences are perceived.

Bannick and van Dam (2007), utilizing preservice teachers' jointly planned videotaped lessons, found that they were able to refine and re-frame their initial ideas about good teaching and pose questions about practice to create a bridge between theory and practice. Discrepancies between what they hoped to achieve and what actually happened created "cognitive dissonance" that was explored via peer-scaffolded feedback sessions intended to expose the extent to which a priori ideas and expectations are operating *behind the scenes*. These student teachers came to realize that their own and their peers' interactional behaviors could be explained in terms of sets of culturally shared expectations that they all unconsciously held.

Orland-Barak and Yinon (2007) analyzed student teachers' reflections on their own classroom discourse to gauge connections they made between theory and practice. Through a series of guided questions, they examined a transcribed lesson from their practice teaching. They were prompted to address questions such as what the analysis of their discourse revealed about gaps between what they think, do, say, or act and what actually happens, and what they had learned about themselves, their students, and about teaching and learning. The authors concluded that when provided with strategically structured mediation, novices are able to reflect at levels beyond technical reflection. They posited that examining their own discourse patterns constituted an opportunity for experiencing dissatisfaction with initial ideas and letting go of rigid beliefs about what constitutes effective teaching, which in turn challenged them to examine connections and gaps between theory and practice, beliefs and actions.

Some studies indicate that beliefs can be altered when a multifaceted approach is implemented that helps prospective teachers acknowledge, articulate, and challenge their beliefs (Boyd, Boll, and Brawner, 1998; Nais, 1987; Wideen, Mayer-Smith, and Moon, 1998; Yost, 1997; Yost, Forlenza-Bailey, and Shaw, 1999). Establishing self-monitoring and self-reflective activities early on in teacher education programs can promote the kind of self-awareness that allows prospective teachers to hear and listen to their own voices.

Promoting Dissonance

The process of questioning assumptions and beliefs creates considerable discord. Questioning assumptions, naming issues, and confronting limiting beliefs inevitably leads to assaults on emotions (Leat, 1995). Arriving at a more examined set of beliefs and a more complex view of teaching practices creates a great deal of dissonance.

An unsettling experience can be a constructive stimulus for reflection. Out of the discomfort comes invaluable learning and insight into practice. Promoting reflection necessitates that teacher educators balance demonstrating acceptance and empathy with being authentic and confronting limiting beliefs.

Examining the efficacy, value, and worth of classroom practices necessarily creates dissonance. When values underlying reflective practice clash with prevailing work climates, conflict is to be expected. Questioning operating assumptions and the status quo can be fraught with conflict, yet working through difficult times is essential to authentic engagement as well as individual growth (Berkey et al., 1990; Johnston, 1994).

Creating dissonance helps developing teachers see the multiple dimensions of dilemmas and consequently choose from a wider range of options (McFalls and Cobb-Roberts, 2001; Windschitl, 2002). As Day (1998) aptly noted, to encourage development of reflective practice, educators will need to be prepared to move beyond “comfortable collaboration.”

Any effort to become a reflective practitioner involves negotiating feelings of frustration, insecurity, and even rejection. It necessitates a journey into the deepest recesses, where both fears and hopes reside. Untangling and reevaluating taken-for-granted, even cherished, practices requires breaking down well-entrenched myths that are not easily dislodged (Smyth, 1992). Working through difficult emotions is essential to becoming a reflective practitioner.

CREATING A LEARNING CLIMATE CONDUCTIVE TO REFLECTION

To develop the habits of mind necessary for reflection, practitioners will need to be exposed to processes that explicitly prompt them to think, re-

spond, and act in new ways. Reflection is enhanced when task structures are provided that mediate or draw personal connections between existing knowledge and new knowledge, allowing learners to tap into their own realm of experiences, reflect on those experiences, and construct personal meaning to inform their practice.

Reflection, especially critical reflection, is a complex construct requiring multifaceted and strategically constructed mediation. Preparing reflective practitioners calls on educators to continuously struggle with the tension between providing supportive scaffolding for encouraging reflection and doing so without reducing it to a series of steps, devising creative strategies that aid in the development of a reflective stance toward the dilemmas of practice and a way of thinking them through (Francis, 1997; Francis and Ingram-Starrs, 2005; Jay and Johnson, 2002).

Much of the literature grapples with moving teachers beyond the surface level of reflection to engage in pedagogical reflection, critical reflection, and self-reflection. There is an emerging consensus developing on the kinds of learning task structures that have the potential to promote higher-order reflection.

Some task structures and other vehicles that have been found useful in promoting reflection include journal writing, computer-mediated dialogue (CMD), narratives, personal histories, autobiographies, metaphors, case studies, critical incidents, support groups, critical friends, and peer coaching. Merging these task structures in creative ways and utilizing them individually, collaboratively, and with facilitated coaching is likely to maximize their potential for promoting the kind of higher-order reflection required to grapple with the daily dilemmas teachers face.

Journal Writing

Journals can serve several important purposes for teachers, including naming issues and posing questions, working through internal conflicts, recording critical incidents, identifying cause and effect relationships, seeing patterns of unsuccessful strategies over time, and tracing life patterns and themes (Larrivee, 2006b; Moon, 2006). Having a record of thoughts, feelings, issues, and concerns can provide both a window of the past and a gateway to the future.

The act of maintaining and reviewing a journal over time provides a useful source for reflection. There is some evidence that when preservice teachers are engaged in journal writing over time they develop the habit of reflection (Francis, 1995; Yost, 1997; Yost, Forlenza-Bailey, and Shaw, 1999).

Research supports journal writing as a tool to prepare preservice educators to become more reflective (Garmon, 1998; Hennings, 1992; Hoover, 1994; McMahan, 1997; Roe and Stallman, 1994). Specific structures found to facilitate reflection include providing guided prompts, structuring periodic rereading of previous entries to search for any emerging patterns, and posing questions in a nonjudgmental way as a means of creating ongoing dialogue (Calderhead, 1991; Collier, 1999; Dobbins, 1996; Keating, 1993; Ross, 1990; Smyth, 1992; Surbeck, Han, and Moyer, 1991; Thorpe, 2004; Wiltz, 1999; Yost, 1997; Yost, Forlenza-Bailey, and Shaw, 1999).

Kolar and Dickson (2002) found that utilizing content-based structured reflective log writing with preservice teachers provides the necessary infrastructure to develop their own personal voices and build their reflective problem-solving skills. The focused, written analyses directed student teachers to select an area of analysis, systematically collect data from videotapes of themselves, summarize their findings, explore the congruency between what they believed and the teaching actions they viewed, tell what they learned about themselves, and tell how they would apply what they learned to future teaching situations. Dobbins (1996), using journal writing with preservice teachers, found that specific prompts to focus on their own learning produced deeper reflection and encouraged teachers to confront broader educational issues in the process of clarifying their own beliefs.

Dialogue journals, first individually written and then shared with another person who makes inquiries for the purpose of expanding thinking, can be an especially useful vehicle for promoting reflection (Keating, 1993). That person might be an instructor, mentor, peer coach, or critical friend.

Spalding and Wilson (2002) identified several pedagogical strategies that helped preservice secondary teachers improve their reflective thinking via interactive journal writing. These strategies included using a real-life, literary model to stimulate students' thinking about what is and is not

reflection to help them distinguish between narrative and reflective writing, coupled with journal responses in which they both posed questions to promote further reflection as well as made personal connections to their students' journal entries. Likewise, Ross (1990) found that autobiographical journal writing with deliberate questioning prompts stimulates greater awareness of personal values and implicit theories of teaching. The regular feedback from a mentor serving in a coaching role can be a valuable tool to move developing teachers along the reflection continuum as well as provide a venue for critical reflection.

Computer-Mediated Dialogue (CMD)

Recently, computer-mediated dialogue (CMD) has added another dialogic dimension to traditional classrooms with the promise of enhancing critical reflection (Mitchell, 2003; Wells, 1999). Writing for an audience and receiving responses may be better suited to critical reflection than oral discussion because of the anticipation of potentially generating iterations of reactions (Windschitl, 1998; Beach and Lundell, 1998).

In theory, asynchronous forms of CMD seem especially likely to promote critical reflection. In asynchronous environments, in contrast to synchronous forms such as chat rooms, participants are able to think about messages and to form and edit their responses (Mitchell, 2003). According to Brookfield and Preskill (2005), the reflective space associated with the private, reflective thinking that appears in asynchronous online learning in contrast to face-to-face discussions enhances the development of critical thought. In this forum, they found more participants willing to risk expressing a contrary view because asynchronous cyberspace forums give participants the time and space to prepare well-thought-out positions.

Several research findings utilizing asynchronous CMD support the contention that it promotes greater critical reflection among prospective teachers (Harrington and Hathaway, 1994; Harrington and Quinn-Leering, 1996; Whipp, 2003). In a study of online discussions focusing on hypothetical teaching dilemmas, Harrington and Hathaway found that the use of CMD helped prospective teachers uncover taken-for-granted assumptions. In a later study involving computer discussion, Harrington and Quinn-Leering found that the ways in which conversations were framed influenced whether prospective teachers simply discussed the academic

consequences of educational actions or broadened their discussions to include social and ethical consequences.

Because CMD is both written and dialogic, it can be an effective strategy for eliciting rich reflections on teaching and learning. Research conducted by Davidson-Shivers, Muilenburg, and Tanner (2001) and Im and Lee (2003–2004) also supports the claim that asynchronous forums are more likely to promote greater reflection. Similarly, Salmon (2002) reported success in promoting reflection activities utilizing an asynchronous text-conferencing system.

Wade, Fauske, and Thompson (2008) used discourse analysis to examine asynchronous peer-led online threaded discussions of prospective secondary teachers as they discussed a case study. Their analysis focused on critically reflective problem solving, which they defined as involving problem framing, solving, and evaluation. They analyzed how problems were framed, or reframed from multiple perspectives, proposed solutions, and whether solutions were evaluated based on their likely effects on the academic and personal lives of students as well as their moral and social consequences. Their findings revealed that some prospective teachers were able to engage in reflective problem solving, framing the problem from multiple perspectives, and consequently advocating pedagogical and curricular changes to better meet students' needs. However, they tended to focus on the personal and academic consequences rather than examining the social or ethical consequences for students.

Some research does call into question the potential of asynchronous forms of CMD with regard to promoting critical reflection. Dodson (2000) found that students were as likely to take a monological stance as a dialogical one, using their postings to transmit information rather than to explore ideas together or negotiate meaning. In another study, participants did not use CMD as a way to discuss issues in depth; rather they tended to acknowledge one another socially and to give advice (Angeli, Valanides, and Bonk, 2003).

Some researchers have also found that online forums are not necessarily democratic, with hierarchies persisting in cyberspace (Boese, 1999; Boler, 2003; Herring, 1994; Wilson, 1999). In contrast, Wade and Fauske (2004) found both male and female prospective teachers to be inclusive and supportive, at the same time willing to challenge others' assumptions and beliefs.

Narratives

Narratives other than journal writing can render a rich understanding of what takes place in the minds of developing teachers as they construct their reality of teaching. Teacher narratives are stories written by and about teachers and can be used as a source of inquiry (Cole and Knowles, 2000; Sparks-Langer and Colton, 1991; Zeichner, 1983). It is a more disciplined form of writing than journaling in that it has a structure and a focus, the intent to communicate a story. Either keen observers or teachers themselves write real stories about teaching, illuminating the realities, dilemmas, and rewards of teaching. Reflecting on teacher narratives can yield insights about motivations for teacher actions, about the complexities of teaching, and about teachers themselves (Sparks-Langer and Colton; Taggart and Wilson, 2006).

Teacher narratives can also be specifically designed to be used as case studies with the explicit purpose of reflecting on a specific problem. Case studies have the potential to foster critical reflection because they involve dialogue about real dilemmas and problems in detailed, contextualized narratives that are similar to situations teachers have experienced (Grossman, 2005; Harrington, 1995, 1999; Harrington and Garrison, 1992; Merseth, 1996; Shulman, 1992; Sykes and Bird, 1992). Using a vehicle of case story writing based on student teaching experiences, Hunter and Hutton (1998) found that combined peer and instructor collaboration helped preservice teachers move toward critical reflection.

Autobiographical sketches, also called personal histories, are a specialized form of teacher narratives (Sparks-Langer and Colton, 1994). These stories of a more personal and in-depth nature offer insight into the past to uncover preconceived theories of practice. When teachers write about their own biographies and how they think these have shaped the construction of their values they are able to see more clearly the influence of social and institutional forces beyond the classroom.

Trotman and Kerr (2001) used personal life histories to create links between theoretical and conceptual content and preservice secondary teachers' biographical experiences. Students were asked to write their journal entries reflecting on the connections between the content being covered and their own life history, and to speculate about how these insights might influence their work as teachers. Analysis of the journals

provided evidence suggesting the reformulation of presuppositions about teaching and learning, an essential foundation of critical reflection.

Hoover (1994) found that reflection was enhanced when student teachers were asked to write structured, rather than more open, analyses of videotapes of themselves teaching. The focused written analyses directed them to select an area of analysis, systematically collect data, summarize their data, explore the congruency between what they believed and the teaching actions they viewed, identify what they learned about themselves as teachers, and tell how they would apply what they learned in their future teaching.

Similarly, according to Smyth (1991), a powerful tool for promoting higher-order reflection is posing a series of questions that move from description (What do I do?) to meaning (What does it mean?) to confrontation (How did I come to be like this?) to reconstruction (How might I do things differently?).

Metaphors

Metaphors bear the images teachers have of themselves as teachers, their professional identity (Bullough, Knowles, and Crow, 1992). Practical theories of teachers are often expressed as metaphors rather than more logical forms of expression and they appear in the natural language teachers use to talk about their teaching (Munby and Russell, 1990). The knowledge-in-action embedded in the personal theories of teachers often cannot be adequately depicted in their actual statements of knowledge and metaphor offers a way to bridge the known to the new.

Through metaphors teachers can elaborate and turn abstractions into real images, helping to give them firmer handles on slippery concepts implicated in the act of teaching. Johnston (1994) and Lasley (1992) advocated the use of metaphors to help teachers become aware of their teaching identities and develop alternative ways to think about an issue.

Metaphors can be an especially powerful tool for expressing meanings that underpin ways of thinking about classroom management. Tobin (1990) used teachers' metaphorical expressions of the role of manager to encourage exploration of the potential limitations embedded in their language. Korthagen (1993) explored a *lion tamer* metaphor used by a beginning teacher struggling with discipline problems as an organizing

theme that served to limit problem-solving capacity. This teacher depicted her plight as being caged in, having to use the whip or risk being torn to pieces. Her metaphor provided a frame of reference that served as an entry into the process of reframing to reveal other possible interpretations.

Marshall (1990) contends that the reflection occurring in the examination of personal teaching metaphors involves reframing the lens through which a teacher perceives a problem. According to Schön, this is a critical attribute of reflective practitioners.

Critical Incidents, Vignettes, and Films

A critical incident is generally conceived of as a self-generated incident, although it could also be a carefully chosen real-world example or case study of a dilemma in practice intended to serve as a springboard for reflection. Descriptions of high and low moments in their practice or details of significant incidents that stand out in their lives as teachers provide the impetus for grappling with problems and dilemmas. When teachers share critical incidents, they come to realize that their individual stories have embedded within them generic themes, discovering that their personal struggles are not so different from those of their colleagues. What they may have thought were idiosyncratic failings or inadequacies come to be seen as common experiences.

There is some evidence that a critical incident can be a tool for deepening the level of reflection. Writing about critical incidents or dilemmas rather than typical daily events has been found to promote critical reflection in novice teachers (Pultorak, 1996). Use of critical incidents with explicit prompts and coaching increased the capacity of preservice teachers to engage in higher-order reflection (Griffin, 2003).

Merging a critical incident task analysis with a process for collaborative reflection enabling participants to act as critical friends, Francis (1997) found that this task structure raised the complexity of the lived experience to a conscious level and promoted acceptance of multiple voices. Novel to this intervention, the author modeled explicit strategies for giving and receiving feedback for the purpose of reconstructing “being critical” as an act of “friendship.”

Lesnick (2005) asked preservice teachers to write a problem-posing narrative of a critical incident from their field placements that represented

a challenge to practice not easily or tidily addressed, then to frame questions and lead a class discussion of the narrative in its multiple facets. Their “problem of practice” reflective essays revealed growth in their ability to integrate moral response with contextual understanding.

Tillema (2000) conducted a comparative analysis of two groups of teachers to determine whether deliberate guided reflection before their practice teaching was more likely to change beliefs on teaching than if done after practice teaching. The reflective task involved examining a vignette of a teaching activity and computing the complexity of arguments on a scale of reflective quality. Results showed that using pedagogic concepts to explore the vignette and justifying their evaluations occurred more frequently after deliberate reflection than after having had practice experiences. Nonetheless, mean reflective scores were relatively low after the retention period, between 4 at pretest and 5.5 at posttest on a scale of 10.

Tan (2006) studied the use of popular films as a vehicle for promoting reflection in preservice teachers. She used viewing the films coupled with journal writing for them to reflect on key issues related to teaching and learning. The author hypothesized that the main reason why films are powerful tools for promoting reflection is that films are narratives propelled by images that provide a galaxy of representations of situations that can illuminate and provoke reflection. According to Holden (2000), writing film response journals helps learners gain the most from films facilitating critical reasoning. A journal combines the objective data of a log with free-flowing personal interpretations and expressions of a diary (Holly, 1989). Tan found appropriately chosen films, accompanied by clear learning objectives and explicit guidelines, to be a useful means of promoting reflection.

CONCLUSION

Teacher educators will have to provide explicit structures to help prospective teachers become reflective practitioners. Even more important is the way they model their own reflection-in-action both during classroom discourse and when providing feedback on student performance and work. To facilitate developing teachers becoming reflective practitioners, teacher educators must be willing to be active participants in their own growth process, questioning the beliefs, values, and assumptions that

guide their work. They will have to be models of reflective practice, assuming responsibility for their own learning, observing their own thinking process, and acknowledging their own limiting assumptions.

Teacher educators will need to shift their role from trainers responsible for developing teaching skills and assessing performance outcomes to learning facilitators who orchestrate a personal discovery process. They will have to create a context for exposing and challenging beliefs in a safe learning environment, legitimizing problems and dilemmas. They must provide just the right amount of tension to allow prospective teachers to transform discomfort into a learning opportunity. It will take carefully constructed scaffolding, meshing powerful facilitation with guided mediation within an emotionally supportive learning climate, to enable prospective, novice, as well as more experienced teachers to deepen their reflective capacity.

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Facilitating Instructional Differentiation via Teacher Reflections about Desired Constructivist Practices and Current Realities

A Pragmatic Research Model

Walter Polka

ABSTRACT

This chapter reinforces the value of individual teachers and teams of teachers reflecting about both their desired and their actual use of various instructional activities and techniques associated with constructivism. A historical review of differentiation and the individualization of instruction are presented in relationship to our cultural experiences. The results of a research study conducted in Georgia in 2007 are analyzed in terms of purposive teacher reflections to improve instruction and as a model to facilitate progressive transitions from teacher-centered instruction to student-centered learning.

INTRODUCTION

Contemporary teachers, at all levels of the instructional spectrum, have been constantly reminded that students are physically, socially, and intelligently different. Educators generally agree that students learn in different ways and have different motivations, but how to individualize instruction and customize student learning has been a major issue for teachers.

Differentiation of instruction is in vogue at the dawn of the twenty-first century; however, historians have identified that the basic tenets of this constructivist approach may be traced to such pioneers as Quintilian, who

recognized the significance of individualizing instruction in the first century; Comenius, who advocated relating instruction to individual growth and development in the seventeenth century; Rousseau, who promoted using student experiences as learning motivations in the eighteenth century; Pestalozzi, who promulgated teachers as facilitators of learning in the nineteenth century; and Dewey, who advanced a progressive student focus in teaching and learning in the twentieth century (Ornstein and Levine, 2008).

Teachers have been constantly admonished to consider using appropriate models of instruction to meet the different needs of their respective students (Johnson, Collins, Duperes, and Johansen, 1991). These models include a variety of techniques and strategies including direct instruction, diagnostic and prescriptive teaching, adaptive teaching using learning styles and brain research, Socratic methods, seminar and tutorial procedures, mastery learning, cooperative learning, and authentic assessments (Polka, Mattai, and Perry, 2000).

CONSTRUCTIVIST APPROACH

However, a number of prominent contemporary instructional techniques and strategies are founded on the constructivist educational philosophy that advocates that learners use their respective experiences to actively construct understanding that makes sense to them rather than have that understanding delivered to them in already organized forms (Eggen and Kauchak, 2001). This constructivist perspective emphasizes active learners who link their new knowledge with prior knowledge and apply their expanded understandings to authentic situations (Foote, Vermette, and Battaglia, 2001). This instructional orientation contends that student understanding of any concept depends entirely on the individual's mental construction of that concept based on individual experiences (Danielson, 1996, p. 23).

But this approach is predicated on an increased awareness of the role of individual differences in learning and includes recognizing a variety of differences such as: "ability level, learning style, ethnicity, gender, socioeconomic status, and so on" (Sternberg and Williams, 2002, p. 444). Such a student-centered orientation in education also requires that teachers

create a learning environment that is not only rich in instructional diversity but also encourages student interactions with each other on a regular basis to help each other reconstruct information for their own authentic understandings.

The following are key constructivist learning environment principles: (1) construct comprehensive learning environments that include real-world problems; (2) incorporate social interactions, reciprocal teaching, and multiple grouping patterns; (3) provide multiple representations of content to promote learning transfer; and (4) use the principles of cognitive and educational psychology (Sternberg and Williams, pp. 444–45).

The role of the teacher in constructivist teaching-learning situations is that of an authentic facilitator of learning as opposed to a primary purveyor of information (Marzano, 2000). Teachers focus on designing activities and assignments that engage students in constructing important knowledge for their own sakes as well as for the sake of meeting specific course and program competencies and expectations. The results of these activities will be different for each individual, depending on their experiences, knowledge, and cognitive structures at the time (Danielson, 1996). Accordingly, the following constructivist teacher behaviors have been enumerated in the research:

- Encourage and accept student ideas and initiatives,
- Use raw data and primary sources along with manipulative interactive and physical materials,
- Encourage student inquiry by asking thoughtful, open-minded questions and encouraging students to ask each other questions,
- Provide time for students to construct relationships and create metaphors. (Brooks and Brooks, 1993)

DIVERGENCE VERSUS CONVERGENCE IN TEACHING: A HISTORICAL REVIEW

Constructivist teaching and learning are intricately tied to promoting a more individualized or divergent approach to education. This concept is fundamental to the American educational experience and is consistent with our cultural ethos. This significance has been documented in educational

literature and research of the past 90 years. The educational concept of individualizing instruction is well established in the philosophical premises upon which the American educational system is built (Polka, 1977).

A cooperative project of the National Education Association, the Association for Supervision and Curriculum Development, the National Association of Secondary School Principals, and the American Association of School Administrators titled *A Climate for Individuality* articulated the key philosophical principles associated with both our cultural and educational heritage:

- The rationalism of the enlightenment which affirms the inherent dignity of the individual as a principle in the constitution of the universe by which men are “endowed by their Creator with certain unalienable rights,” among them, “life, liberty, and the pursuit of happiness.”
- Scientific findings, especially from the behavior sciences, supporting the belief that human nature develops its potentials most fully when individuality is respected.
- Pragmatic confidence—derived from experience in giving free play to intelligence, sensitivity, and creativity in problematical situations—that respect for the individual is the ultimate key to progress. (Joint Project on the Individual and the School. 1965, p. 15)

Thus, the respect and regard for the individual is firmly rooted in the heritage of American philosophical thought. This heritage has promoted a climate for individuality in American schools or, at least, recognition of the significance of focusing on the individual.

However, during the late nineteenth and throughout the twentieth century, America was in the Industrial Age and its schools and their educational programs reflected that industrial society (Hlebowitsh, 2001). Our educational system had a markedly industrial base—a standardized curriculum, a standardized management approach, and a standardized calendar-driven measurement system that made it most efficient to administer and teach the same subject content to all of the students regardless of their motivations.

Schools and their educational programs were planned, structured, operated, and evaluated in terms of the industrial age mentality of control, conformity, and gross efficiency (Danielson, 2002). Most often the individual

and his/her unique abilities, interest, motivations, and aspirations were subjected to predetermined learning experiences that were congruent with industrial-age thinking (Darling-Hammond, 1997; Oakes, 1985). Oakes poignantly emphasizes the above industrial vision of schools:

Turn-of-the-century Americans had fallen in love with industrial efficiency, the vision of the factory busily engaged in a neatly standardized and controlled process of mass production. In went raw materials and through the application of scientifically determined “best” methods and tools out came ready-made goods, and machinery all designed to improve the quality of American life. (p. 27)

This industrial tradition, along with twentieth-century Social Darwinism and the rapidly increasing population caused by the flood of immigration, encouraged schools to develop a structure and culture that was counter to individuality. Oakes adroitly states,

It was seductive, as schools became large, to think of them as factories that could use efficient and scientific methods to turn raw material—children—into finished products, i.e., educated adults. The emphasis of this efficiency movement, however, was to produce educational products (students) at the lowest cost. The excellence of the product was hardly considered. Issues of educational quality or scholarships were rarely brought to bear on schooling decisions. (1985, pp. 29–30)

As our society continues in the transition from the industrial society of the twentieth century to the post-industrial society of the twenty-first century, it is imperative that our educational system, also, change to a more individualized approach. However, most educators, still, are drawn like to a magnet either to: (1) the traditional industrial age teacher-centered pole in terms of setting course objectives, lesson planning, class testing, and other class management activities that resonate with industrial standards and result in convergent teaching; or, (2) the student-oriented magnetic pole that advocates individualizing instruction and customizing learning.

This dynamic educational bipolar magnetism is illustrated in figure 8.1, which is based on nine functional categories of teaching enumerated 40 years ago and traditionally practiced by educators (Polka, Mattai, and Perry, 2000, p. 393). That figure also identifies that most educators are

philosophical perspective is most appropriate in terms of facilitating the successful transition of our educational system from a teacher-centered focus to a student-centered focus—one teacher, one team, one faculty, one school district at a time.

The individualization of instruction is a curriculum concept designed to “help each [student] become all he/she is capable of being.” This concept, best identified in the 1964 ASCD Yearbook *Individualizing Instruction*, involves teacher-pupil planning of the interests, goals, activities, and outcomes of the learning process. This planning is based upon a cooperative analysis of the needs of society and the needs of the individual (Doll, 1964, p. 13). The ASCD Yearbook Committee specifically emphasized the following: “We on the committee consider the chief object of individualization to be the release of potential in the individual learner . . . potential which is useful both to the learner and the society in which he lives” (p. 13).

Accordingly, the individualization of instruction is a highly child-centered approach to learning, which empowers the student to choose procedures, materials, and time needed to accomplish the educational objectives that have been established as a result of his interest and teacher-community curriculum planning (Polka, 1977).

The individualization of instruction, with its roots in constructivism, focuses on the student and his particular interests and needs (Armstrong, Henson, and Savage, 2005). It is a philosophical orientation that identifies every student as gifted and talented and that each has special needs.

Instructional methods and learning strategies for differentiation are designed, implemented, and evaluated according to the talents, needs, and interests of each individual. There is no one-way, prescribed, pre-packaged, and absolutely correct instructional design in the constructivist perspective. Since each individual is unique, several procedures are constantly made available to facilitate individual learning. Each student has an individualized curriculum guide that includes independent experiences, small group interactions, and large group presentations that have been cooperatively developed by teacher-student-community curriculum planning (Woolfolk, 2001).

Dewey, the quintessential American educational philosopher, promoted individuality in twentieth-century schools. And he provided the

philosophical premises upon which the education system for the twenty-first century must be built:

Since learning is something that the pupil has to do himself and for himself, the initiative lies with the learner. The teacher is a guide and a director; he steers the boat, but the energy that propels it must come from those who are learning. The more a teacher is aware of the past experiences of students, their hopes, desires, chief interests, the better will he understand the forces at work that need to be directed and utilized for the formation of reflective habits. The number and quality of these factors vary from person to person. They cannot, therefore, be categorically enumerated in a book. (1916, as cited in 1966, p. 51)

The Summerhill School founded by A. S. Neil in England was recognized as a twentieth-century model for the ultimate application of Dewey's principles in schools because of its experience-based focus on student-centered learning. It served as a model in the 1960s and 1970s for more than 600 experimental schools in the United States and has, itself, gone through criticisms from convergent teacher-centered educators (Stronch and Piper, 2008). However, it may well be the "educational phoenix" of the twenty-first century because in 2005 it received "very high" ratings from government inspectors in terms of student satisfaction (Stronch and Piper, p. 7). It may once again be viewed as a harbinger for individualizing instruction and customizing learning in the Dewey tradition.

But there never has been, is not now, nor ever will be one comprehensive, completely exclusionary and absolutely correct set of learning materials and activities that are appropriate for all students at any grade level. "All Children Can Learn . . . But, not on the same day or in the same way" is a key contemporary educational concept that is directly related to our historical traditions. As Stronch and Piper (2008) conclude: "There is nothing perfect about examples such as Summerhill, nor can we imagine they transfer unproblematically to other contexts. But they ought to be part of any discussion" (p. 31).

Also, there are numerous other schools and numbers of teachers employing various instructional approaches and curriculum programs that facilitate student-centered learning in this initial decade of the twenty-first century. Keefe, a researcher focused on student-centered learning, concluded that several programs including the following currently be-

ing implemented in American schools, in varying degrees, contain key elements associated with student-centered learning: Accelerated Schools Project, ATLAS Learning Communities, Expeditionary Learning Schools Outbound, Foxfire Fund “Core Practices,” High/Scope K–3 Model Program, Coalition of Essential Schools, and High Schools for the New Millennium–Gates Foundation (2007, p. 221).

It is essential that we determine the extent as well as the quality and successful aspects of these currently employed programs, strategies, and techniques, as well as others, so that more teachers and more schools can become student centered. One way to do so is to encourage teachers to reflect on their instructional practices.

FACILITATING TEACHER REFLECTIONS

Researchers on effective teaching and student achievement specifically conclude that teachers do make a profound influence on student learning in even the poorest performing schools and that, in fact, “the individual classroom teacher has even more of an affect on student achievement than originally thought” (Marzano, Pickering, and Pollock, 2001, p. 3). However, in many schools, teachers are unaware of instructional approaches and techniques that others have found successful. Danielson amplifies this point:

In many schools, teachers work almost in complete isolation: they prepare for their own classes on their own, develop their own tests, and submit their own grades when they are due. Such teachers work almost as independent contractors: they are hired to do a job and they do it, but not as members of a team. This isolation is detrimental to students, as the teachers cannot be aware of the approaches and strategies that others have found successful, and might even be working at cross purposes without even knowing it. (2002, p. 62)

Dufour, the prime promoter of professional learning communities, contends that, even though most educators know better, they still do not practice in a collaboration culture. “Despite compelling evidence that working collaboratively represents best practice, teachers in many schools continue to work in isolation” (2004, p. 9).

Consequently, there is a definite need and national interest to facilitate individual teacher, teacher team, and school faculty reflections about their

respective instructional approaches and strategies in order to coordinate a focus on teaching-learning effectiveness from a constructivist perspective (Danielson, 1996). There is also a need to provide a research-based model that may be used by individuals, teaching teams, and school faculties to reflect about constructivism and assess their desired levels of differentiation as well as the current realities in their respective teaching-learning settings.

GEORGIA DISCREPANCY RESEARCH DESIGN, METHODOLOGY, AND LIMITATIONS

During the 2007 fall semester, doctoral candidates at Georgia Southern University from the Augusta, Statesboro, and Savannah cohorts and their professors became interested in the implementation of constructivist principles and differentiation strategies and techniques employed by Georgia teachers K–12. They decided to conduct a quantitative study to determine the “desired” frequency of use of various instructional activities and techniques associated with individualized instruction and customized learning as well as the “actual” use of those activities in Georgia classrooms similar to other discrepancy survey models (Denig, 1994).

They reviewed and revised a quantitative instrument consisting of three parts:

Part I, *Demographic Data*, was designed to gather information about participants’ educational experiences.

Part II, *Frequency of Instructional Use and Desired State*, was designed to gather information about participants’ desired frequency of use and their respective actual frequency of use of individualized instruction and customized learning activities and techniques.

This part consisted of 25 statements derived from research and literature associated with constructivism, differentiation, individualized instruction, and customized learning (Armstrong, Henson, and Savage, 2005; Brooks and Brooks, 1993; Danielson, 1996, 2002; Darling-Hammond, 1997; Egen and Kauchak, 2001; Foote, Vermette, and Battaglia, 2001; Johnson, Collins, Duperes, and Johansen, 1991; LeFrancois, 2000; Marzano, 2000; Marzano, Pickering, and Pollock, 2001; Ornstein and Levine, 2008; Polka, 1977; Polka, Mattai, and Perry, 2000; Slavin, 2006; Snowman and Biehler, 2003; Sternberg and Williams, 2002; Woolfolk, 2001). Each participant

was asked to rate both their “desired” frequency of use and their “actual” frequency of use of each of the 25 statements on the following Likert scale: (1) Never, (2) Seldom, (3) Sometimes, (4) Usually, or (5) Always.

Part III, *Personal Responses*, was designed to provide participants opportunities to respond as they wished to the following two open-ended questions: (1) What do you feel needs to be done to make individualized instruction and customized learning or differentiation practices more common in today’s classrooms; and (2) Please provide any additional comments you may wish regarding individualized instruction and customized learning in contemporary Georgia.

Once the Georgia Southern University Institutional Research Board (IRB) approved the research project, a convenience survey sampling technique (Coladarci, Cobb, Minium, and Clarke, 2008, p. 202) was used to distribute and anonymously collect the surveys. Each of the 35 doctoral candidates was given ten surveys to distribute to educators they knew within their school buildings or in their respective school districts who had professionally employed various individualized instruction and customized learning activities and techniques in their respective classrooms. Subsequently, a total of 350 survey instruments were distributed throughout the state of Georgia to teachers known to have employed various differentiation strategies in their respective classrooms. A total of 181 useable surveys were returned for analysis. This number represented a return rate of 51.7 percent.

However, there were limitations to this study in that the sample was restricted to educators in Georgia who were known by the doctoral candidates as constructivist teachers. There most definitely are other constructivist educators throughout the state of Georgia as well as throughout the United States who were not consulted for this study about their current and desired use of individualized instruction and customized learning strategies and activities.

GEORGIA TEACHER SURVEY SAMPLE DEMOGRAPHIC DATA

The demographic information collected from the sample population represented the general population of Georgia teachers in several aspects, but

there were also differences in some categories from the statewide teaching population.

The Georgia sample for this study consisted of 181 teachers whose teaching experience ranged across the spectrum from 1 to more than 21 years. Thirty-four teachers, or 18.8 percent of the sample, had 1 to 4 years of teaching experience; 46 teachers, or 25.4 percent, had 5 to 10 years of teaching experience; 34 teachers (18.8 percent) had 11 to 15 years of teaching experience; 33 teachers, or 18.2 percent, had 16 to 21 years of teaching experience; and 34 teachers, or 18.8 percent, had more than 21 years of teaching experience. Thus, this sample represented a fairly equal distribution of teaching experience from those who would be classified as novices to those who would be classified as midcareer professionals and to those who would be classified as senior professionals.

This sample was skewed toward teaching at the high school level since almost 70 percent of the sample, or 125 individuals, listed high school as their teaching level. But 30, or 16.6 percent, of the sample identified themselves as elementary teachers and 16, or 8.8 percent, of the sample identified themselves as middle school teachers.

This sample reflected a good cross section of the teaching profession in that all of the common curriculum areas in K–12 education were represented. Sixteen teachers, or 8.8 percent, of the sample taught all subjects; 5 teachers, or 2.8 percent, of the sample taught art or music; 7 teachers, or 3.9 percent, of the sample taught business; 25 teachers, or 13.8 percent, of the sample taught language arts-English; 9 teachers, or 5 percent, of the sample taught foreign languages; 36, or 19.9 percent, of the sample taught mathematics; 11 teachers, or 6.1 percent, of the sample taught physical education; 18 teachers (9.9 percent) of the sample taught science; 23 teachers (12.7 percent) of the sample taught social studies; 11 teachers, or 6.1 percent, of the sample taught special education; and 16 teachers (8.8 percent) taught vocational-technical subjects.

This sample was overwhelmingly a public school sample with 177 teachers (97.8 percent) of the sample indentifying that they taught in a public school, whereas only 3 teachers identified that they taught in a private school. One participant did not respond to that demographic data prompt.

This sample represented more of a rural teaching experience than that of an urban or suburban teaching situation. Forty-four teachers (24.3

percent) of the sample identified that their school was an urban school; whereas, 43 teachers, or 23.8 percent of the sample, identified that their school was a suburb school; and 83 teachers (45.9 percent) of the sample identified that their school was a rural school. Seven teachers, or 3.9 percent, did not respond to this prompt. Thus, this sample represents a relatively equal ratio of urban and suburban teachers, but the rural teachers outnumber both urban and suburban teachers by a 2 to 1 ratio. This sample is skewed toward rural school contexts more than urban and/or suburban school contexts.

This sample represented more of the average school building population than the very small or very large school building populations. Only 4 teachers, or 2.2 percent of the sample, taught in buildings with a student population of 499 or less; 51 teachers (28.2 percent) of the sample taught in buildings with a student population between 500 and 999 students; 34 teachers, or 18.8 percent of the sample, taught in buildings with a student population between 1,000 and 1,499 students; 83 teachers (45.9 percent) of the sample taught in buildings with a student population between 1,500 and 1,999 students; 8 teachers (4.4 percent) of the sample taught in buildings with a student population between 2,000 and 2,499 students. Given that most of the sample 125 teachers, or 69.1 percent, identified that they taught in high school, it is not surprising that most of the sample also taught in buildings of a 1,000 or more students since this is more typical of the student population of Georgia high schools.

This sample represented different class sizes. But the average class size of this sample was fairly consistent with that of the general Georgia faculty. Eleven teachers, or 6.1 percent of the sample, had an average class size of 10 or fewer students; 9 teachers (5 percent) of the sample had an average class size of between 11 and 15 students; 32 teachers (17.7 percent) had an average class size of between 16 and 20 students; 60 teachers (33.1 percent) had an average class size between 21 and 25 students; 61 teachers (33.7 percent) had an average class size of between 26 and 30 students; and 5 teachers (2.8 percent) had an average class size of more than 30 students.

Therefore, this sample was fairly representative of the general Georgia K–12 teaching profession in terms of teaching experience, subjects taught, student school-building populations, and average class sizes. However, the sample was skewed toward high school teachers, rural teachers, and

public school teachers. But the results of the quantitative data collected from this sample of 181 teachers serve as valuable references for educators facilitating teacher reflection about constructivist concepts and differentiation strategies in various classrooms K–12.

FINDINGS RELATED TO GEORGIA SURVEY SAMPLE NEEDS

The data from the returned surveys were tabulated and various statistical treatments were applied using the Statistical Package for the Social Sciences (SPSS) (Coladarci, Cobb, Minium, and Clarke, 2008) to determine relationships between and among the demographics and the responses to the 25 statements of the survey. In addition to descriptive statistics, key statistical analysis applications, including stepwise linear regression (Coladarci, Cobb, Minium, and Clarke), were applied to the data to ascertain if there were any significant differences between and among the independent (demographic data) and dependent variables (survey statements) of the study. Also, the qualitative analysis program NVivo (QSR, 2008) was used to establish patterns related to the free response questions of Part III of the survey instrument.

RELIABILITY OF SURVEY STATEMENTS

The Cronbach Alpha reliability test (Coladarci, Cobb, Minium, and Clarke, 2008) was applied to the data and the results were as follows: Questions 1–25 A (*Desired*) $R = 0.942$; Questions 1–25 B (*Actual*) $R = 0.922$. These results indicated a very high reliability of both the desired and the actual frequency of use of various activities and techniques associated with individualized instruction and customized learning. Thus, the instrument statements, gleaned from existing research and literature, on the topic are reliable to assess participant frequency of use of the activities and techniques associated with constructivism, differentiation, individualization of instruction, and customization of learning.

Stepwise linear regression was applied to both the desired and actual data and the results indicated that there were significant differences.

There were significant differences in school student population and teaching experience at the $p < 0.01$ level in terms of the independent variables (demographic data) and the dependent variables (survey statements).

A further analysis of the data indicated that as the school student population increased, the desire to individualize instruction, as identified by this sample, decreased. Also, as teaching experience increased, the desire to individualize instruction decreased, according to this sample. Subsequently, it may be inferred that teachers in smaller student-populated school buildings may have greater opportunities to comprehensively know their respective students and implement meaningful activities and techniques based on student interests and needs. And teachers in smaller student-populated school buildings may have more firsthand experiences observing their colleagues practicing differentiation in their classrooms. Also, veteran teachers may not have the same degree of enthusiasm to individualize their instruction as new teachers who recently completed certification programs that emphasize more of a constructivist approach to teaching.

Stepwise linear regression also indicated that there were significant differences in both teaching level and class size in terms of responses to actual teaching situations. The teaching level significant difference was at the $p < 0.01$ level in terms of the independent variables (demographic data) and the dependent variables (survey statements). The class size significant difference was at the $p < 0.05$ level.

An analysis of the teaching level data identified that as the grade level increased, this sample's actual use of individualized instruction and customized learning activities and techniques decreased. Subsequently, it may be inferred that high school teachers actually employ fewer constructivist approaches than do elementary teachers. But, it should be noted that there was no significant difference found in their desire to employ constructivist practices. Their actual use of differentiated strategies may be related to the contemporary increased emphasis on high-stakes standardized tests at the secondary level.

An analysis of the class size data revealed that as class size increases, the actual use of individualized instruction and customized learning activities and techniques decrease. This is consistent with contemporary research related to class size (Danielson, 2002; Darling-Hammond, 1997; Marzano, 2003) and this sample's recommendations in Part III of the study.

QUARTILES OF MEAN DIFFERENCES BETWEEN DESIRED AND ACTUAL PRACTICES

The means of each statement both A (*Desired*) and B (*Actual*) were compared to determine the frequency of each of the activities and techniques that this Georgia sample felt reflected their respective classroom “*desires*” and “*actualities*.” The results were then cast into four quartiles for ease of reference and to identify the frequency of those activities and techniques.

The first quartile represents those six activities and techniques from the survey instrument statements that had the least difference between the desired responses (A) and the actual responses (B). These represent the activities and techniques that have the greatest congruence between the constructivist desires of this sample and their actual employment of them in their teaching-learning settings.

The second quartile represents those seven activities and techniques from the survey instrument statements that had the next lowest difference between the desired responses (A) and the actual responses (B). These represent the activities and techniques that have some degree of congruence between the constructivist desires of this sample and their actual employment of them in their teaching-learning settings.

The third quartile represents those six activities and techniques from survey instrument statements that had a higher degree of difference between the desired responses (A) and the actual responses (B). These represent the activities and techniques that have less congruence between the constructivist desires of this sample and their actual employment of them in their teaching-learning settings.

The fourth quartile represents those six activities and techniques from survey instrument statements that had the greatest difference between the desired responses (A) and the actual responses (B). These represent the activities and techniques that have the least congruence between the constructivist desires of this sample and their actual employment of them in their teaching-learning settings.

The rationale for dividing the sample’s responses to each of the 25 statements in this quartile fashion was to illustrate the use of this data in facilitating the movement of individual teachers and/or teams of faculty from a teacher-centered approach to a more student-centered or construc-

tivist approach in their teaching. Since those statements in the first quartile are those that this sample agreed that they desire to employ and those that they, in fact, employ to about the same degree; then those statements may be referenced as the activities and techniques that currently need to be only reinforced and/or fine tuned to become more of a student-centered constructivist teacher.

But the statements in the second quartile are those that this sample agreed that they desire to employ but that they, in fact, employ to less of a degree; then those statements may be referenced as the activities and techniques that currently need to be further reinforced and/or reintroduced to become more of a student-centered constructivist teacher.

The statements in the third quartile are those that this sample agreed that they desire to employ but that they, in fact, employ to a lesser degree; then those statements may be referenced as the activities and techniques that currently need to be further developed and/or comprehensively reintroduced to become more of a student-centered constructivist teacher.

Finally, those statements in the fourth quartile are those that this sample agreed that they desire to employ but that they, in fact, employ to the least degree; then those statements may be referenced as the activities and techniques that currently need to be extensively developed and/or comprehensively reintroduced to become more of a student-centered constructivist teacher.

The following quartile rankings of the survey instrument statements are based on the data collected from the Georgia sample:

Quartile 1. Individualized Instruction and Customized Learning Survey Statements with the Very Good Congruency between Desired and Actual Means

1. *The personal problems or learning handicaps of students are accepted with consideration, understanding, and empathy.* Desired = 4.6; Actual = 4.2; Difference = 0.40.
2. *Formal evaluation and marking are based on authentic assessment principles.* Desired = 4.29; Actual = 3.78; Difference = 0.51.
3. *Cooperative learning experiences are used so that students often receive instructional assistance from one another.* Desired = 3.95; Actual = 3.41; Difference = 0.54.

4. *The teacher practices the use of open-ended questioning rather than focusing on the “right” answer syndrome.* Desired = 4.00; Actual = 3.43; Difference = 0.57.
5. *The teacher communicates individually with students or in small groups, as opposed to “total” class discussions.* Desired = 3.89; Actual = 3.31; Difference = 0.58.
6. *Students play an active role of contributing to the direction or content of the lessons in their learning experiences.* Desired = 4.38; Actual = 3.79; Difference = 0.59.

Quartile 2. Individualized Instruction and Customized Learning Survey Statements with Good Congruency between Desired and Actual Means

1. *Classroom objectives focus on cultivating and facilitating social skills, cooperation, idea exchange and shared problem-solving, as opposed to memorizing.* Desired = 4.24; Actual = 3.6; Difference = 0.65.
2. *Pre-tests and other similar diagnostic instruments are used to determine the parts of a unit that individual students need.* Desired = 3.86; Actual = 3.18; Difference = 0.68.
3. *Students are offered instructional assistance and guidance individually rather than in a large group setting.* Desired = 4.25; Actual = 3.57; Difference = 0.68.
4. *Different instructional techniques are used with different students.* Desired = 4.01; Actual = 3.31; Difference = 0.70.
5. *Divergent ideas are encouraged by the teacher in evaluating student work, as opposed to expecting convergence in exams and other evaluations.* Desired = 3.75; Actual = 2.98; Difference = 0.77.
6. *Different students, when working on a unit of instruction, use different materials, resources, and equipment.* Desired = 3.70; Actual = 2.92; Difference = 0.78.
7. *The teacher’s role is that of a facilitator of learning or resource partner, “guide on the side.”* Desired = 3.93; Actual = 3.15; Difference = 0.78.

Quartile 3. Individualized Instruction and Customized Learning Survey Statements with Fair Congruency between Desired and Actual Means

1. *Information is presented in a manner that promotes authentic inquiry and students are encouraged to consider questions for which a “right” answer may not exist.* Desired = 3.90; Actual = 3.10; Difference = 0.80.
2. *The students and teacher respect the diverse opinions of others and come to agreements in a collegial fashion.* Desired = 4.27; Actual = 3.45; Difference = 0.82.
3. *A variety of diverse learning assignments are designed to meet individual student interests and needs.* Desired = 4.13; Actual = 3.28; Difference = 0.85.
4. *Knowledge of each student, including life outside of school, is used to plan instructional activities.* Desired = 3.49; Actual = 2.57; Difference = 0.92.
5. *The time that students have to complete or master a given concept or skill varies based on individual differences.* Desired = 3.99; Actual = 3.07; Difference = 0.92.
6. *Sufficient time is allocated for students to think, play with ideas, manipulate objects, and experiment in learning without pressure to get “the right answer” at the “right time.”* Desired = 4.11; Actual = 3.18; Difference = 0.93.

Quartile 4. Individualized Instruction and Customized Learning Survey Statements with the Least Congruency between Desired and Actual Means

1. *Students conduct a major part of their learning on a self-directed basis.* Desired = 3.58; Actual = 2.64; Difference = 0.94.
2. *Lesson planning is done for individual students rather than for the entire class.* Desired = 3.22; Actual = 2.27; Difference = 0.95.
3. *Diagnostic elements, such as I.Q., reading level, and math ability are used to plan individual student activities.* Desired = 3.78; Actual = 2.82; Difference = 0.96.
4. *Students are evaluated individually and move on to another task once they have mastered the objectives on a unit.* Desired = 3.84; Actual = 2.79; Difference = 1.05.
5. *Student evaluations are based on individual learning growth instead of fixed standards all are expected to learn.* Desired = 3.72; Actual = 2.60; Difference = 1.12.

6. *Students play an active role of contributing to the direction or content of the lessons in their learning experiences.* Desired = 3.80; Actual = 2.00; Difference = 1.80.

PART III, PERSONAL RESPONSES

Part III, *Personal Responses*, was designed to provide participants opportunities to respond as they wished to the following: (1) *What do you feel needs to be done to make individualized instruction and customized learning or differentiation practices more common in today's classrooms;* and (2) *Please provide any additional comments you may wish regarding individualized instruction and customized learning in contemporary Georgia.* All of the responses to both prompts were reviewed and analyzed using NVivo (QSR, 2008). Two basic themes emerged in response to both of the Part III queries: participants wanted either an increase in some teaching-related issues and/or a decrease in others.

The following, in rank order according to the number of responses, are the teaching-related issues that the sample desired to be increased in order to make individualized instruction and customized learning more common in contemporary Georgia classrooms: planning time; training-development; resources-technology; help in the classroom; instructional space; staff; administrative support; time in school day; teacher pay; funding; online course work; homogenous groupings; motivation.

The following, in rank order according to the number of responses, are the teaching-related issues that the sample desired to be decreased in order to make individualized instruction and customized learning more common in contemporary Georgia classrooms: class sizes; emphasis on testing.

Thus, this sample is consistent with contemporary literature and research related to constructivism, differentiation, individualized instruction, and customized learning in terms of the teaching issues they perceive need to be increased, such as planning time; training and staff development experiences; resources; technology, including both hardware and software; administrative support; and more instructional time (Danielson, 2002; Darling-Hammond, 1997; Marzano, 2003).

This sample is also consistent with contemporary literature and research related to constructivism, differentiation, individualized instruc-

tion, and customized learning in terms of the teaching issues they perceive need to be decreased, such as class size and testing emphasis (Danielson, 2002; Darling-Hammond, 1997; Marzano, 2003).

IMPLICATIONS

The implications of this Georgia research study on individualizing instruction and customizing learning are numerous. Teachers given the opportunity to purposely reflect about constructivist teaching concepts, differentiation of instruction ideas, and various activities and techniques associated with individualizing instruction and customizing learning will identify that they, indeed, employ most, if not all, of them in their contemporary classrooms. The degree to which they do so varies, but they do acknowledge that they employ the activities and techniques identified in research and literature as being constructivist based and differentiation oriented. They also reflectively identify that they desire to employ more of those activities and techniques in their respective classrooms.

Teachers, administrators, curriculum coordinators, staff developers, consultants, and university professors should use this research model in order to illustrate that moving toward a more student-centered approach in contemporary classrooms is not such a radical paradigm shift. It is simply a matter of having each individual teacher and or teams of teachers reflect about their desired and actual instruction within a constructivist framework, using this study's survey instrument. A valid procedure would be to use the resulting aggregate data and analyze the gaps between the desired state and the actual state of teaching, and proceeding prudently by ranking those differences and commencing cooperatively to lessen the gaps by focusing on those areas deemed most appropriate to address for them.

Those areas will vary from teacher to teacher, team to team, and school to school; some individuals and/or teams may wish to address the areas of greatest discrepancy between the desired teaching state and the actual teaching state while others may desire to take a "small steps" approach and fine tune those areas of narrowest gaps first. Administrators and teacher leaders definitely can facilitate the decision making regarding the best approach given the various internal and external intervening variables of their respective contexts.

Danielson reinforces that the above approach is an appropriate strategy to use in contemporary schools,

In a school committed to enhancing learning, educators must examine all aspects of what they do to determine where best to invest their energy. The decisions teachers and administrators make every day must focus on improving student learning based on what we know and believe. Because practitioners are busy people, and because schools are complicated places with many interacting components, educators must set priorities among competing goals. (2002, p. 32)

Those committed to facilitating instructional differentiation via teacher reflections about desired constructivist practices and current realities will find the best-fit options in terms of closing the gaps for their specific cases; this research model is simply a tool they can use. However, it is a very useful tool since it promotes reflection with a purpose and demonstrates that becoming more student-centered in teaching is not as difficult or as abstract as it may seem. There simply needs to be the will to close the gaps between one's desired state of instruction and one's actual practice and work collaboratively in professional learning teams to find the most appropriate way to implement more differentiation in teaching and learning.

The Concerns Based Adoption Model (CBAM) may be the best reference for school leaders in considering the various approaches to use in implementing the results of the discrepancy survey, because this change model itself is predicated on the key concepts of constructivism and differentiation and because of its diagnostic and prescriptive dimensions it has been assessed as a "truly humane" approach to change in schools (Hall and Hord, 2006, p. 257). Accordingly, teachers reflecting about their perceived needs to improve their practice to more appropriately meet the diverse interests and needs students will themselves differ from each other in their readiness and enthusiasm to further investigate and implement instructional activities that promote individualized instruction and customized learning.

Another approach to promote purposive reflection about the survey data within a faculty is to create a Professional Learning Community (PLC) focused on improving instruction by analyzing the gaps between the differentiation strategies that teachers desire versus those they cur-

rently employ. This focus on instructional practice is consistent with the purposes for a PLC as Dufour identifies:

The powerful collaboration that characterizes professional learning communities is a systematic process in which teachers work together to analyze and improve classroom practice. Teachers work in teams engaging in an ongoing cycle of questions that promote deep team learning. This process, in turn, leads to higher levels of student achievement. (2004, p. 9)

Dufour provides evidence that a PLC working in this manner can make a difference in student achievement by changing the focus from teaching to learning. The success of this PLC focus on customized learning approaches at the Adlai Stevenson High School in Lincolnshire, Illinois, the Boones Mill Elementary School in rural Franklin County, Virginia, and the Freeport Intermediate School in Texas attest to the positive student results that accrue from teachers working in teams reflecting on their instructional practices and focusing on the individual needs of their students (Dufour, 2004, p. 11). But, everyone in the professional learning community needs to always and in all ways continue to reflect that “the road to success is always under construction” (Hall and Hord, 2006, p. 278).

The key is to foster a culture supportive of teacher reflection about constructivism to move more teachers toward the student-centered pole as depicted in figure 8.1. Meaningful instructional reform in schools depends on such a culture:

Reform is only possible if we can create the kind of cultures that foster critical reflection, inquiry, communication and multiple feedback loops. Experiencing and participating in a community of practice where real questions and issues were engaged with and listened to with care were the essential building blocks of the community as was the commitment to act, attend to, and be responsible for the impact of actions in the classroom setting. (Rath, 2009, p. 116)

SUMMARY

Educators need time to reflect about their classroom practices and analyze how congruent their actual teaching experiences are with their desired

teaching behaviors. This reflective process essentially determines the discrepancy between the existing and needed competencies of the instructional staff vis-à-vis individualizing instruction and customizing learning (Rebore, 2007, p. 183). That is the inherent value of a purposive reflective experience as advocated by this researcher and illustrated by the Georgia discrepancy research model. Educational leaders need to encourage more professional self-reflection as a starting point for enhancing student achievement. And the sooner teachers practice reflection, the better as advocated by the Interstate New Teacher Assessment and Support Consortium (INTASC): “The teacher is a reflective practitioner who continually evaluates the effect of his or her choices and actions on others (students, parents, and other professionals in the learning community) and who actively seeks out opportunities to grow professionally” (Rebore, p. 205).

Classroom teachers need time to dream about what they would really like to see in their teaching-learning settings and then they need the opportunities to share those aspirations and inspirations with their colleagues in a true constructivist manner and plan cooperatively to help each other attain their instructional desires. Constructivist approaches, as identified in this article, should be used to facilitate instructional innovations. We should, after all, practice what most of us preach, to some extent, and differentiate, individualize, and customize the improvement process.

The reconstruction of our reflections about constructivism and sharing experiences with colleagues in a professional learning community and/or employing the CBAM model to improve student achievement will facilitate educational transition in our society. The National Association of Elementary School Principals (NAESP) encourages educational leaders to create a climate for such reflection in schools as a means to promote student achievement. The NAESP contends that effective leaders do the following: (1) provide time for reflection as an important part of improving practice; (2) invest in teacher learning; (3) connect professional development to school learning goals; and (4) provide opportunities for teachers to work, plan, and think together (National Association of Elementary School Principals, 2001, p. 41).

The research survey instrument used in the 2007 Georgia study reviewed in this chapter is available to facilitate instructional differentiation via teacher reflections about desired constructivist practices and current realities from the author at w.polka@niagara.edu.

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**TEACHER REFLECTIVITY WITH
TEACHER CANDIDATES**

Analyzing Reflectivity with MAT Teacher Candidates

A Model of Critical Components and Multiple Contexts

Nancy P. Gallavan and Angela Webster-Smith

ABSTRACT

Teacher candidates are expected to reflect upon their prior knowledge, field experiences, and new discoveries in preparation for life-long teaching careers. However, concepts and practices related to teacher reflectivity are not taught easily, understood fully, or demonstrated clearly. Teacher reflectivity needs to be deconstructed and analyzed in ways that are comprehensively organized, systematically constructive, and developmentally appropriate. Following the Critical Components and Multiple Contexts of Self-Assessment Model, the philosophies, processes, and purposes of self-assessment are presented so reflective insights are pragmatic, effective, and efficient. Placed within six complementary contexts of education, the three components of self-assessment equip teacher educators with a model to help teacher candidates analyze their own growth and development so reflection is positive, principled, and productive.

INTRODUCTION

Accredited teacher education programs across the United States are guided by conceptual frameworks that feature teacher reflectivity, decision making, and educational efficacy (NCATE, 2006). Teacher educators expect teacher candidates to reflect upon their prior knowledge, field

experiences, and new discoveries in preparation for their future careers as classroom teachers. Usually candidates design and teach lesson plans and units of learning that culminate with candidates reflecting on both their strengths and their weaknesses.

However, rarely are teacher candidates taught the purposes, processes, and philosophies of reflecting in multiple contexts of education that are essential for analyzing and understanding their own growth and development. Too often, teacher educators ask candidates to reflect on their practices without providing candidates with the necessary tools and refined techniques ensuring that reflection is principled, productive, and positive.

Exasperating teacher educators, the rationale to improve teacher reflectivity frequently intensifies when reading candidates' reflections. Teacher educators and mentors realize that their candidates may or may not comprehend key factors contributing to as well as detracting from the candidate's teaching effectiveness. Candidates may or may not make visible the valuable connections relating theory, research, and practice. Plus, candidates may or may not recognize the value in reflecting and writing their reflections with the depth, breadth, and context (Palmer, 1969) that demonstrate proficient growth and development. Ultimately, teacher educators become frustrated as they assess their candidates' steps toward success, generating more challenges than rewards for both the teacher candidates and teacher educators (DeMulder and Rigsby, 2003; Drake, 1997; Fendler, 2003).

From these observations, one teacher education program transformed teacher reflectivity by employing unconventional measures to transform traditional concepts. In particular, this model designed teacher reflectivity to be comprehensively organized, systematically constructive, and developmentally appropriate to advance the candidate's understanding, success, and satisfaction (Anderson, Spooner, Calhoun, and Spooner, 2007). With the clarity of crystal, the Critical Components and Multiple Contexts of Self-Assessment Model guides teacher educators and candidates through the processes of reflecting thoughtfully, completely, and productively. The procedures also allow candidates to examine both the strengths and the weaknesses of their principles and practices so candidates become more purposeful and positive in all contexts of teaching.

Each of the three critical components—reaction, response, and reflection—is explored through six contexts of education: the personal,

professional, pedagogical, political, public, and perplexed selves as part of the first course in the teacher education program. Moreover, the model affords philosophical connections to teacher candidates' idealistic, realistic, pragmatic, and existential beliefs. For optimal transparency, this manuscript features the alignment and sequence of a course's objectives, activities, and assignments along with candidates' comments to illustrate applications of the three components and the six contexts.

LITERATURE REVIEW

Influence of Hermeneutic Phenomenology

Essential to analyzing the three critical components of self-assessment is the influence of hermeneutic phenomenology or the interpretation of text (Palmer, 1969) on one's sense of reality and, especially, teacher candidates' presuppositions about education. As candidates read various texts, write their papers, and exchange their insights with peers, hermeneutic phenomenology contributes to their growth and development related to expanding their knowledge, enriching their teaching, and energizing their outlooks. As candidates comprehend the structure and function of self-assessment, they become more efficient and effective practitioners.

Teaching and learning are lived experiences (Morgan, 2003) that intersect with one's immediate surroundings. Such experiences generate the shared construction of knowledge, skills, and dispositions (Vygotsky, 1978) in multiple contexts. Teachers and students in turn interpret phenomena that occur during these intersections. On some level the interactions are influenced and resonate for long periods of time, perhaps forever. Each of us finds the language to understand and express not only phenomena but also the consequences of our sensitivities to phenomena and resulting phenomena through the three critical components of self-assessment.

Teacher Reflectivity

Dewey (1933) introduced teacher reflectivity by distinguishing between nonreflective and reflective teachers. Nonreflective teachers accept current principles and repeated practices without questioning the status quo

they consider to be reality. Dewey believed that these teachers behave impulsively during or immediately following an event to maintain their interpretation of the collective sense of tradition and normalcy (Rodgers, 2002). Little or no effort is committed to doing things differently to improve efficiency or effectiveness for the individual or the group.

Conversely, Dewey purported that reflective teachers continually question their guiding principles and espoused practices through a scientific lens featuring open-mindedness, responsibility, and wholeheartedness. These teachers dedicate time and effort to becoming more involved decision makers.

Schön (1987) advanced the conversation on teacher reflectivity changing how classroom teachers, school administrators, and teacher educators view their roles and responsibilities both in developing their own practices and also in mentoring novice teachers and teacher candidates. Emphasizing practitioner-based intuition, Schön advocated balancing the art of teaching with the science of teaching as supported by Dewey. Teacher reflectivity was enthusiastically incorporated throughout teacher education at that time. Zeichner (1990) expanded teacher reflectivity to include the social context with the focus on democratic principles, educational equity, and social justice; later, Helterbran (2008) extended the discussion by including the importance of the teacher and the learners.

THREE CRITICAL COMPONENTS OF SELF-ASSESSMENT

The Critical Components and Multiple Contexts of Self-Assessment Model portrays self-assessment as a recursive event involving three different functions: reaction, response, and reflection (see figure 9.1). Teacher candidates benefit from assessing their principles and practices frequently so they can note their progress and formulate appropriate plans to build competence (Drake, 1997), confidence (Kanter, 2004), and readiness (Olson 2008). The greatest amount of growth and development occurs when teachers conduct their own self-assessments (Baxter Magolda, 2001, p. 1). In view of this revelation, the Self-Assessment Model includes a six-step process that can be visualized as continuous cycles both within each component as well as between components. The six steps involve

1. taking realistic inventory of the current situation to collect baseline assessment data in ways that provide honesty, clarity, and insight;
2. analyzing data to identify overarching strengths and reoccurring weaknesses;
3. planning and engaging in rewarding activities to maintain and build upon strengths;
4. planning and engaging in practical activities to modify and overcome weaknesses;
5. seeking supportive feedback and collaborative mentoring from a knowledgeable other; and
6. establishing an achievable timeline to conduct another realistic inventory of the same criteria to collect formative and summative assessment data.

Each of the three critical components plays an intricate role in the self-assessment processes, empowering candidates to analyze their own growth and development.

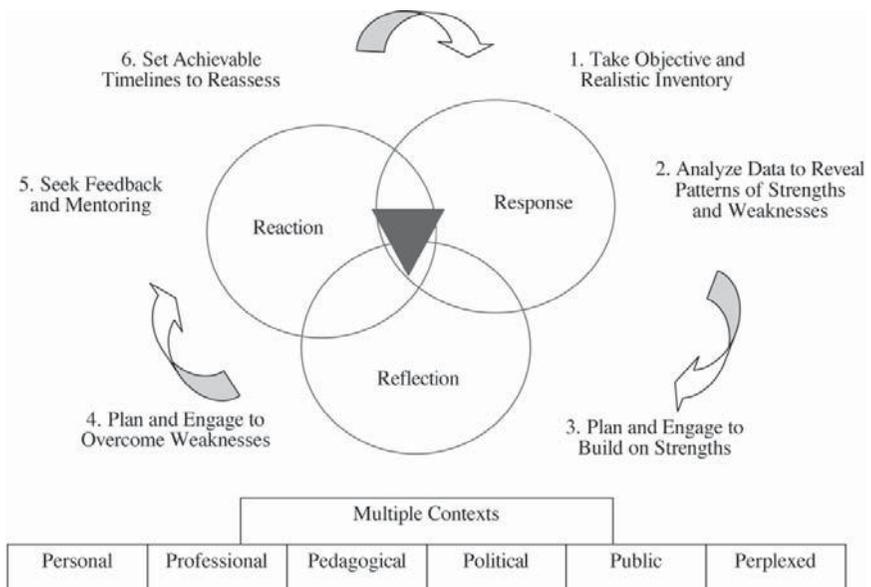


Figure 9.1. Critical components and multiple contexts of self-assessment model.

Reaction

Reaction (Kise, Russell, and Shumate, 2008) results in a quick reply that may or may not occur with much thought and consideration. One might describe reactions as noisy, busy, and chaotic, likened to a cacophony of sounds on a school playground. Reactions frequently answer the question of *what* to which teachers provide a technical description (van Manen, 1977). They typically showcase attention to selected details with an emotional connection but absent a sense of ownership. For example, teacher candidates frequently are asked, “*What occurred during the lesson?*” A reaction would be superficial and terse. The process of reacting tends to be provided hastily and emotionally. These outcomes are evident when candidates write a rough draft with a weak narrative or give an explanation under duress or with resistance.

The goal is to help candidates acknowledge when they tend to become reactive and to redirect them in becoming proactive, questioning what they know, to reveal detailed information that is useful for them. As candidates conduct these meaningful inquiries, they will begin to categorize observations and recognize patterns by examining teacher ontology or the nature of identity and conscientiousness associated with their self-assessments (Donnelly, 1999; Kincheloe, 2003).

Response

Response (Sockman and Sharva, 2008) instigates a more perfunctory reply that occurs with some attention and deliberation. Responses are softer, conversational, and managed in the same way students might use their inside voices. In general, responses expect candidates to reference various resources in order to construct a knowledgeable yet obligatory answer. Responses frequently answer the question of *how* to which teachers provide an informative justification (van Manen, 1977) that highlights efficacy, although it may be automatic and offered to deflect additional inquiry. For example, candidates may be asked, “*How did the assessment align with the objective of the lesson?*” A response would be mechanical and dutiful. Candidates demonstrate the process of responding when they revise a rough draft with yet another copy that lacks depth and contains elements of avoidance to avert possible probing.

The goal associated with responding is to prompt candidates to start proposing new ideas and solutions by posing the question of how. Candidates begin to explore the notion of how they know what they know or teacher epistemology by examining causation of events (Bondy et al., 2007; Howard, McGee, Schwartz, and Purcell, 2000), which affects their educational efficacy and decision making.

Reflection

Reflection produces a delayed reply that happens with much more mindfulness and contemplation. Reflections are quiet, contemplative, and chosen, tantamount to the voice one would use in the library. Reflections frequently answer the question of *why* to which candidates provide the relevant significance (van Manen, 1977), showcasing objectivity punctuated with insight. For example, candidates may be asked, “*Why is cooperative learning useful for this unit of learning?*” A reflection would include objective evidence and integrative connections. The process of reflecting resembles the preparation of a final paper with the candidate revisiting the piece frequently and revising it from multiple perspectives.

The goal combined with reflecting or looking back is projecting or looking ahead by delving into logic and reasons prompted by the question of why. Through deliberate and mindful reflection, candidates explore teacher axiology by asking why they have come to know or believe the values or ethics guiding their knowledge, skills, and dispositions (Birmingham, 2003; Petrie, Lindauer, and Tountasakis, 2000).

MULTIPLE CONTEXTS

As candidates begin to conduct their self-assessments, it is essential for them to examine the multiple contexts of education and the personae or facets of teaching (Smyth, 1989). Teachers possess a personal self, a professional self, a pedagogical self, a political self, a public self, and a perplexed self. Each of the six contexts exist both in isolation from and in combination with the other five contexts. Delving into the six contexts helps candidates fit the pieces together, encompassing the total puzzle of

their being as philosophy, process, and product contribute to their analysis of reflectivity (Valli, 1997).

The Personal Self

One's background emanates from one's culture, family, home, community, education, religion, and experiences; the candidate acquires knowledge, skills, and dispositions that shape the individual as a person. Each candidate infuses a great amount of individuality into the classroom that features one's background, experiences, and outlooks that resonate (Schön, 1983) throughout the school and communities. Most graduate candidates have amassed considerable life experiences and are mature adults.

The Professional Self

From one's work and business experiences, as a consumer and a producer, the candidate has acquired knowledge, skills, and dispositions that contribute to the individual as a professional within a particular academic discipline or expertise. Each candidate offers different types of knowledge related to content, pedagogy, content pedagogy, classroom management, and community building (Shulman, 1987). Most candidates rely heavily upon the knowledge they have gleaned during their teacher education programs as they begin their teaching careers. Graduate candidates have worked in either a wage- or salary-earning position. Some candidates have worked for many years in one career and are seeking a midcareer change or new post-retirement career. Other candidates have worked as paraprofessionals in schools and classrooms, and yet other candidates are teaching in their own classrooms with provisional licenses.

The Pedagogical Self

The ways in which an individual teaches another individual or a group of individuals constitutes the pedagogical self. Although pedagogy may seem like an aspect of one's classroom interactions, pedagogical skills are key to one's growth and development (Black and Wiliam, 1998). Pedagogical effectiveness relates to teachers' expertise to inform and support learners using their knowledge and dispositions to guide and reinforce

their learners academically and socially. When introduced to the pedagogical self, some candidates do not realize or appreciate that they have been teachers in various capacities. They may be parents, grandparents, coaches, religious teachers, scout leaders, and so forth. They may have facilitated a community class or even guided a friend in learning a new skill. The ways one teaches tend to be highly influenced by the way one was taught. All of these interactions start to define one's pedagogical self.

The Political Self

The beliefs that adults have adopted about the education and business of schooling form the political self. Candidates need to become aware of one's understanding and attitudes about the purposes, governance, legalities, funding, and human resources involved in schooling (Murrow, 2008). Many candidates own their homes, pay property taxes, and vote in school board and school bond elections. These candidates are parents and grandparents; they are attuned to the political perspectives and many challenges pertaining to educators, education, and citizens. Some candidates have served on school boards and helped with elections and school issues; these candidates can provide first-hand insights.

The Public Self

Although most candidates are eager to take on the status of classroom teacher, the candidates are just beginning to realize the responsibilities and the development of a public self that accompanies their future roles (Lampert, 2003). Understanding the public self involves examining one's image from many different viewpoints. Candidates are encouraged to consider what they believe the public expects of them as teachers both in the classroom and out in the world, how candidates will fulfill various expectations, and why it is or is not important to each candidate to maintain the public self as each one has chosen.

The Perplexed Self

As many philosophies will conclude, the answers should generate more questions. Once candidates begin to identify and solidify their beliefs and

values (personally, professionally, pedagogically, politically, and publicly), additional thoughts and interesting complexities generally arise. As teacher education courses open new doors and examine interactions from multiple perspectives (Stiggins, 2007), candidates benefit from articulating the mysteries that challenge their thinking as questions to probe as they continue to travel their educational journeys.

Samples of teacher candidates' levels of reflectivity in each of the components and in each of the six contexts of education are shown in table 9.1.

THE PRESENT INVESTIGATION

With the escalating attention on educational efficacy, questions related to clear philosophies of reflectivity, suggested processes for reflecting, constructive purposes for reflecting, and comprehensive alignment of reflectivity with teacher education continue to arise (Rodgers, 2002). Teacher educators, teacher candidates, school administrators, and classroom teachers all want more guidance and support connecting teacher reflectivity to teacher efficacy (Amobi, 2005).

At one south central university, documents from three national professional associations frame the graduate teacher education program: (1) the six standards issued by the National Council for the Accreditation of Teacher Education (NCATE, 2006), (2) the nine standards for teacher educators published by the Association of Teacher Educators (ATE, 2007), and (3) the 19 criteria of the Teacher Performance Outcomes Assessment (TPOA) (UCA, 2008). The TPOA correlates to the four domains of the Praxis III (ETS, 2008): Domain A: Planning and Preparation, Domain B: Classroom Environment, Domain C: Instruction, and Domain D: Professional Responsibilities based on the research of Danielson (2007). The university is located in the only state that holds all teachers accountable for passing Praxis III within their first three years of teaching.

As found in other teacher education programs across the United States, teacher reflectivity needs to be taught as a holistic model so the philosophies, processes, and purposes are comprehensively organized, systematically constructive, and developmentally appropriate (Loughran, 2002; Pultorak, 1993). The model needs to focus on self-assessment to deconstruct the vagueness of teacher reflectivity and to provide candidates with

Table 9.1. Teacher Candidates' Sample Reactions, Responses, and Reactions**Sample Reactions**

Personal Self:	<i>I am who I am; take or leave it.</i>
Professional Self:	<i>I presume I'll learn and do more throughout my career.</i>
Pedagogical Self:	<i>I teach the way I was taught when I was in school.</i>
Political Self:	<i>I voice my opinions when and where I want.</i>
Public Self:	<i>I generally do not change my behavior when I am in public.</i>
Perplexed Self:	<i>I provide the best answer I know and as soon as possible.</i>
	<i>What is wrong with parents when they do not attend conferences?</i>
	<i>What is wrong with parents who tell me how to do my job too often?</i>

Sample Responses

Personal Self:	<i>I am the product of my parents, community, school, and religion.</i>
Professional Self:	<i>I hope to expand my knowledge, skills, and involvement.</i>
Pedagogical Self:	<i>I watch and listen to my students so I can help them.</i>
Political Self:	<i>I keep myself well informed and I keep my ideas to myself.</i>
Public Self:	<i>I do what I think people expect of teachers.</i>
Perplexed Self:	<i>I provide the best answer I can based on the situation and facts.</i>
	<i>How can I get parents more involved and responsible?</i>
	<i>How can I empower my students to be responsible for themselves?</i>

Sample Responses

Personal Self:	<i>I am a work in progress. I grow by asking questions and figuring it out for myself.</i>
Professional Self:	<i>I seek ideas and inspiration everywhere; I want to be involved.</i>
Pedagogical Self:	<i>I learn with my students through reciprocity.</i>
Political Self:	<i>I recognize the power I have as a citizen and a teacher.</i>
Public Self:	<i>I try to serve as a role model everywhere.</i>
Perplexed Self:	<i>I provide the best answer I know and as soon as possible.</i>
	<i>Why don't we schedule conferences when parents are available?</i>
	<i>Why don't we change conferences into a time for students to share their progress with their parents and peers?</i>

necessary tools and refined techniques to analyze their own principles and practices so growth and development are positive and productive. The Critical Components and Multiple Contexts of Self Assessment Model links the four domains of the TPOA to multiple contexts of education with assignments and activities that are pragmatic, effective, and efficient.

Purpose

In the program under investigation, teacher candidates are required to complete an introductory course titled Analysis and Practice of Teaching. There are six major goals framing this course, each aligning with the six

contexts to teaching: (1) building upon the candidate's past knowledge and experiences—the personal self; (2) exploring the candidate's understanding of becoming an educator—the professional self; (3) equipping the candidate to be an effective classroom teacher—the pedagogical self, (4) probing the candidate's view of the governance, legalities, and funding of education—the political self, (5) examining the candidate's community interactions—the public self; and (6) articulating the candidate's questions about teaching to help guide the candidate's future—the perplexed self.

SELECTED ACTIVITIES ALIGNED WITH CRITICAL COMPONENTS AND MULTIPLE CONTEXTS

Letter to a Former Teacher

In order to prompt the newly enrolled teacher candidates to transition their focus from their current jobs to their future careers as classroom teachers, the first assignment connects the past with the future by asking them to think about an outstanding teacher who taught them and preferably a teacher who taught them in the grade(s) and subject area(s) they aspire to teach. Albeit fictitious, candidates write a letter to their former teacher telling the teacher what they have been doing since high school, what they hope to teach, how they plan to achieve their aspirations, and why they aspire to become teachers. The assignment also asks candidates to describe what this particular teacher did that captured their attention, to justify how this teacher's words and actions were effective, and to signify why this teacher serves as a positive role model (Trotman and Kerr, 2001).

The letter emphasizes three key words of inquiry: what, how, and why. These three words reappear in all of the assignments and establish the three critical components of self-assessment. The question of what elicits dialectic discussions or explanations of information and events. The question of how stimulates dialogic conversations or examinations of situations and processes. Ultimately, the question of why sparks profound discourse or the expression and exchange of enlightenment. The letter to a former teacher supports Domain A: Planning and Preparation as candidates embark on their journey; discussions about curriculum development and standards are incorporated early in the course. The first steps involve

planning from the overall career switch to every detailed requirement in preparation to become a reflective decision maker.

Metaphor: Paper and Presentation

The second assignment aligns with establishing the environment and constructing the appropriate climate. Most candidates are unaware of the importance of both Domain A: Planning and Preparation and Domain B: Environment and Climate, especially the necessity of creating a sense of place. The emphases on fairness, equity, respect, and rapport with and among students are new and captivating notions for the candidates. Many of them have been out of school for at least 10, if not 20 or 30 years.

To make these criteria visible, the second assignment is to select an object that serves as a metaphor for a community of learners. The candidates are required to bring the object or a picture of the object to class and talk about it for four or five minutes based on a paper they have written about their metaphor. The class is arranged in a large circle of chairs without desks or tables separating the members of our own community of learners. The exchange of ideas replicates the criteria of Domain B: Environment and Climate.

Again, the assignment focuses on describing what the object is, justifying how the object serves as their metaphor for a community of learners, and signifying why the candidates have selected these particular objects. Candidates express their individual ideas and their explanations begin their own enlightenment into the critical components of self-assessment (Sparks-Langer, 1992).

Lesson Plan: Paper, Presentation, Reflection

The bulk of the course is dedicated to writing, presenting, and reflecting on a lesson plan (Amobi, 2005), just as the bulk of Praxis III focuses on Domain C: Instruction and Assessment. Some candidates are surprised that they must teach a lesson in their first course; other candidates seem ready and eager. Members of the Professional Education Unit (PEU) have crafted formats for the lesson plan and lesson reflection for use with all candidates. The formats match the lesson presentation observation protocol used during field experiences and internships, the electronic portfolio,

and Praxis III. This seamless approach equips all faculty, supervisors, and candidates with the same language and expectations allowing candidates to improve their effectiveness with each course as they expand from writing their first lesson plans through designing their units of learning to completing their internships.

As candidates are guided through the lesson plan and lesson reflection formats in the third assignment, the attention is placed once more on the three prompts: what, how, and why. Throughout each format, candidates must express what objective, grouping, activity, and assessment will be used; how they are going to be used; and why they are appropriate.

Philosophy of Education, or This I Believe Paper

The fourth and final assignment corresponds with Domain D: Professionalism and Responsibilities. Candidates write philosophy of education papers that culminate the events of the introductory course and bridge to the rest of their teacher education program courses. As candidates progress through the program, they continue to revise their philosophy of education papers that will be posted on their electronic portfolios during their internships.

Teacher candidates across the United States commonly write philosophy of education papers; running an Internet search elicits unlimited samples of available papers. Therefore, writing the philosophy of education paper for this assignment is based on several unique changes. The theme of the paper is to elicit less of a canned philosophic statement in the academic sense to more of a reflective composition based on the “This I Believe” essays from the National Public Radio (NPR) program (Allison and Gediman, 2007). Reconceptualizing the standard philosophy of education paper makes the assignment more meaningful.

The philosophy of education, or This I Believe, paper for this course is constructed around six contexts so candidates begin to see themselves in various perspectives as they pursue their new careers. Too often, the philosophy of education paper is confused between personal statements and professional overtones. Candidates question their abilities to articulate personal values about professional commitments. Guiding candidates through the complexities of developing a cogent and germane philosophy of education paper has led to the identification of six contexts or lenses

through which candidates are encouraged to see themselves: the personal self, the professional self, the pedagogical self, the political self, the public self, and the perplexed self.

The philosophy of education paper aligns with Domain D: Professionalism and Responsibilities. Criteria for this domain emphasize reflection and efficacy, two terms frequently used in education that are unknown to new teacher candidates. Although they may understand the word *reflection*, meaning to look back, the word has expanded in meaning throughout this first course in the program. Reflection now encompasses three critical components of self-assessment that apply to all contexts. Once candidates competently and confidently master their abilities to comprehensively self-assess via all three components, candidates will achieve a sense of efficacy and readiness.

PHILOSOPHIES VIS-À-VIS SELECTED TEACHER REFLECTIVITY ACTIVITIES

When teacher candidates begin to write their philosophies of education, they tend to rely on one of four beliefs: idealism, realism, pragmatism, and existentialism. Although each of the four beliefs may seem separate and discrete, many candidates seem to evolve during the introductory course and realize the numerous connections among philosophies, curriculum, and self-assessment.

The philosophy of idealism relates to planning and preparation. Writing their letter to a former teacher allowed candidates to write a personal note to a role model to share their future plans with hopefulness and optimism. The concept of educational ontology is associated with the emerging patterns observed in their letters. The philosophy of pragmatism links with environment and climate. Selecting and writing about an object associated with a community of learners empowered candidates to visualize their sense of place in ways that are practical and uncomplicated. The concept of educational epistemology is linked to the basis of one's foundational thoughts and beliefs.

The philosophy of realism unites with instruction and assessment. Designing, facilitating, and reflecting on a lesson plan demonstrated that candidates comprehend the details involved with efficient and effective

teaching, basically what works. Here the concept of educational axiology is connected with one's choices to achieve efficacy.

The philosophy of existentialism attaches to professionalism and reflection. Constructing a philosophy of education or a This I Believe paper revealed to candidates a first glimpse of their own realities.

Finally, the concept of educational logic comprising one's principles and practices closes the cycle of self-assessment. In summary, as candidates were introduced to the components and contexts, the assignments modeled to candidates the importance of incorporating voice, choice, and ownership in both the process and product for themselves and their future students (Zigarmi, Blanchard, O'Connor, and Edebum, 2004).

CONCLUSION

Teacher candidates will not learn to deconstruct and analyze self-assessment (Korthagen and Kessels, 1999) unless they are guided down the journey of reflectivity (Spalding and Wilson, 2002), experience the critical components in practical assignments (van Manen, 1990), examine continuity and intervals in multiple contexts (Collier, 1999), and connect their philosophies with curricula and self-assessment. Following the structures and functions of the Critical Components and Multiple Contexts of Self-Assessment Model, candidates are equipped and empowered (Ross, 2007) with a mechanism to analyze their reactions and responses as reflective decision makers with dialectic and dialogic discourse. As teacher candidates accept the process of self-assessment, they transform themselves from thinking about reflecting to automatically reflecting to fulfill their success and satisfaction as teachers (Drake and Miller, 1991).

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Teacher Reflectivity

Importance, Origins, and Tools to Facilitate

Rachel Wlodarsky

ABSTRACT

According to Day, a necessary condition of effectiveness as a teacher is regular reflection upon the elements that make up teaching practice (as cited in Loughran, 1999). Teachers need to learn the why's of teaching and in order to do so, they need to participate regularly in the reflective practice process. This chapter provides an explanation as to why reflective practice is important for teachers and students, a chronological overview of the concept of reflection in general, and an overview of reflection as it relates to the profession of teaching.

INTRODUCTION

Current research shows an increasing recognition that the teacher, K–12 and college, is at the center of any attempt to improve the quality of teaching and learning. Attempts to reorganize programs, develop curriculum, and improve teacher effectiveness ultimately rely on the professional development of the teacher (Levine, 2005). According to Day, engaging routinely in reflection upon thinking and practice is a necessity in order to sustain professional health and competence (as cited in Loughran, 1999).

Unfortunately, most teachers over the years become locked into “single loop” learning as they develop routines in school cultures that often discourage the sharing and critiquing of practice (Argyris and Schön, 1974); Clark and Yinger, 1979, as cited in Loughran, 1999). Preparation for teaching has emphasized teachers’ behaviors and skill development apart from thinking about those behaviors. Teachers would learn only the how and not the why of teaching; in contrast, reflective teacher education focuses on how successful teachers think.

This chapter provides an explanation as to why reflective practice is important (for teachers and students), a chronological overview of the concept of reflection in general, and an overview of reflection as it relates to the profession of teaching.

IMPORTANCE OF REFLECTIVE PRACTICE FOR TEACHERS AND STUDENTS

When Schön (1987) discussed the “ill defined problems of practice” associated with professional life, he may well have been writing about the professional lives of teachers. Added to the problems associated with accreditation, compliance, and licensure, teachers have the task-derived decisions associated with daily job responsibilities around teaching, curriculum, and state standards. Decisions concerning time management, priority setting, and student complexity are ill defined, stressful, and fraught with ambiguity. How can teachers survive the pressures of professional, personal, and societal requirements? One answer to this question is the application of *reflection on practice* as a self-directed approach to professional development.

In Dewey’s words (1933), “Reflection emancipates us from merely impulsive and merely routine activity, it enables us to direct our activities with foresight and to plan according to ends-in-view or purposes of that we are aware, to act in deliberate and intentional fashion, to know what we are about when we act” (p. 17). For Dewey, a fundamental purpose of education is to help people acquire habits of reflection so they can engage in intelligent action (p. 78).

Ball and Cohen argue that the vision of a better education is complex; therefore, teachers need opportunities to reconsider their current practices

and to examine others, as well as to learn more about the subjects and students they teach (as cited in Darling-Hammond and Sykes, 1999). Teacher reflectivity would facilitate such opportunities. Reflective practice has been found to be both relevant and valuable in the professional development of both college teachers (Hatala [Wlodarsky], 2002; Wlodarsky, 2005; Wlodarsky and Walters, 2006) and K–12 classroom teachers (Walters, 2002). Wlodarsky (2005) found that reflection, in particular, among college of education faculty can be related to changed beliefs and practices in their classrooms. Additional studies also suggest that reflection can lead to positive changes in practice (Ferry and Ross-Gordon, 1998; Hoffman-Kipp, Artiles, and Lopez-Torres, 2003; Schön, 1987).

It is paramount that we consider the professional development needs of teacher candidates, current practicing teachers, and college teachers, as the result is twofold: a more mature teacher who will, more likely, produce reflective, learned students.

CHRONOLOGICAL OVERVIEW OF THE CONCEPT OF REFLECTION

As researchers continue to study the concept of reflection, its definition and purpose evolves. The literature on reflective practice outlined below provides a chronological overview of these definitions and purposes.

In ancient Latin and French terms, reflection connoted “bending back” on oneself. In contemporary terms, Seibert and Daudelin (1999) related reflection to the mental activity individuals engage in to try to make sense of experience.

Freire (1973) believed reflection resulted in critical consciousness in that learners become actors, not observers, and authors of their own decisions. When we as learners do not reflect on our place in the world or critically evaluate the validity of information presented to us, we become passive and superficial, accepting faulty logic, untested ideas, and allowing ourselves to be swayed by deceptive arguments and polemics. Freire argued, by combining action and reflection we create *praxis*—a set of practices informed by reflection. Thus our actions are not random or haphazard but informed and deliberate and we are aware of why we do what we do (1973).

Boud, Keogh, and Walker (1985) described reflection as “a generic term for those intellectual and affective activities in that individuals engage to explore their experiences in order to lead to new understandings and appreciations” (p. 19). Richards (1990) argued, “Reflection is a response to a past experience and involves conscious recall and examination of the experience as a basis for evaluation and decision-making and as a source for planning and action” (p. 5).

Twenty years later, Freire (1993) once again discussed the concept of reflection. This time he described reflection as “an objectification of experience in time, epochs of past, present, and future that allows a human being to plan for a different future” (p. 83).

Mezirow (1991) differentiated among three types of reflection on experience, only one of which, premise reflection, can lead to transformative learning. Premise reflection involves examining long-held, socially constructed assumptions, beliefs, and values about the experience or problem. He also made a distinction between reflection being implicit, as when we mindlessly choose between good and evil because of our assimilated values, or explicit, as when we bring the process of choice into awareness to examine and assess the reasons for making a choice (Mezirow, 1998).

Atkins and Murphy (1995) defined reflection in the professional arena as a complex and deliberate process of thinking about and interpreting experience in order to learn from it. Imel (1992) added, “Reflective practice links thought and action, because its objective is to improve one’s professional practice. Reflective thinking has also been defined by Mahnaz (1997) in relationship to metacognition as “thinking about one’s own thinking.” He argued that this was self-monitoring based on cognitive-mediational theories of learning.

In *Teaching and Learning Through Critical Reflective Practice*, Ghaye and Ghaye (1998) define reflection as “looking back and making sense of your practice, learning this and using this learning to affect your future action; it is about making sense of your professional life” (p. 2). More specifically, the authors spoke of ten principles that exist within the notion of reflective practice. These include:

1. Reflective practice needs to be understood as a discourse.
2. Reflective practice is fueled and energized by experience.

3. Reflective practice is a process that involves a reflective turn; this means returning to look again at all our taken-for-granted values, professional understandings and practices.
4. Reflective practice is concerned with learning how to account for ourselves.
5. Reflective practice should be understood as a disposition to inquiry.
6. Reflective practice is interest serving, when we reflect we are engaging in a process of knowledge creation.
7. Reflective practice is enacted by those who are critical thinkers.
8. Reflective practice is a way of decoding a symbolic landscape.
9. Reflective practice sits at the interface between notions of practice and theory.
10. Reflective practice occupies a position at the confluence or intersection of a number of ways of knowing. (Ghaye and Ghaye, 1998, pp. 16–19)

It is evident that the definition and purpose of reflection has evolved. In the last decade, researchers have continued to study and share their findings on reflective practice. More recently, Brookfield (2000) concurred that Mezirow's (1991) argument for premise or critical reflection is central to transformative learning and went a step further by defining critical reflection as some sort of power analysis involving hegemonic assumptions. Jay and Johnson (2002) also provided a description of the reflective process:

Reflection is a process, both individual and collaborative, involving experience and uncertainty. It is comprised of identifying questions and key elements of a matter that has emerged as significant, then taking one's thoughts into dialogue with oneself and others. One evaluates insights gained from the process with reference to: (1) additional perspectives, (2) one's own values, experiences and beliefs, and (3) the larger context within that the questions are raised. (p. 76)

Feinstein (2004) noted that critical reflection and reflective discourse "are two processes that are used to facilitate transformative learning; without these processes, it is unlikely that an action of learning will be truly

transformative” (p. 109). Merriam added to the complexity of reflection by introducing levels of maturation for reflection. Merriam argued that “being able to critically reflect and in particular, to critically self-reflect on our own assumptions as well as those of others, that involves critique of a premise upon that the learner has defined a problem mandates an advanced level of cognitive development” (2004, p. 61).

In addition to the field of education, the concept of reflection has also been studied within numerous other professional arenas. Seibert and Daudelin (1999) stated,

There is considerable literature from scholars in education, law, nursing and medicine focusing on professional practice. From these perspectives, reflection is seen as an ongoing process of critically examining current and past professional practices against standards or objectives with the goal of improving future practices and increasing knowledge. (p. 2)

When several of the concepts of reflection are viewed in combination, a stronger understanding of reflection is gained; therefore, obtaining these numerous definitions and/or views of reflection may provide a comfort level in that professionals choose to proceed with the reflective process.

OVERVIEW OF TEACHER REFLECTIVITY

Beginning with John Dewey, the notion of reflection has been studied for almost a century. It was Dewey who first linked his findings on reflection to the profession of education. Dewey (1933) identified the need for teachers, in particular, to reflect on their practices in order to act deliberately and intentionally rather than spontaneously and routinely. Dewey and Schön (1987) contended that teachers’ work is complex and requires deep and foundational reflective practices.

The question still remains, how can teachers be good reflective practitioners if they don’t completely understand what the concept “reflection” means? Part of the problem, according to Kuit, Reay, and Freeman (2001), is the term itself is open to many interpretations. In everyday conversation, it has been devalued to describe merely thinking about a subject

without the element of query and inquiry. Nevertheless, many researchers have made efforts to develop a better understanding of reflective practice specific to the profession of teaching.

Dewey (1933) and Schön (1987) argued for a proactive and learner-centered form of reflection in that the teacher becomes the owner of, and subject in, the process of his or her own reflection. This would result in developing a language for talking and thinking about their own practices, questioning the sometimes contradictory beliefs underpinning their practice, and taking greater control over their own professional growth. Schön argued that reflective practice is “a research process in that the fruits of reflection are used to challenge and reconstruct individual and collective teacher action” (as cited in Ghaye and Ghaye, 1998, p. 5). According to Mezirow, “A reflective teacher is one who, given particular circumstances, is able to distance themselves from the world in that they are an everyday participant and open themselves to influence by others” (as cited in J. Loughran, 1999, p. 218).

Shulman (1987) defined reflection as a teacher’s recalling the teaching and learning experience, reconstructing the events, generating alternatives, and considering the ethical implications of the teaching event. Reflection is also referred to as critical reflection, an activity or process in that experience is recalled, considered, and evaluated, usually in relation to a broader purpose. Grimmer and colleagues (1990) believe reflection is a more deliberate process that asks teachers to question their understandings, rethink their assumptions, and consider their options.

Zeichner and Tabachnick identified four varieties of reflective practice in U.S. teacher education. These include *academic* that stresses subject matter, *social efficiency*, emphasizing the application of teaching strategies, *developmentalist* is sensitive to students’ interest, thinking, and patterns of developmental growth, and *social reconstructionist* that focuses on the institutional, social, and political contexts of schooling. *Generic* reflection is also defined by Zeichner and Tabachnick as reflection in general that advocates without much specificity about the desired purposes and content of the reflection (as cited in Zeichner, 1994a).

According to Day, reflective practice is defined as continuing conscious and systematic review of the purposes, plans, action, and evaluation of teaching in order to reinforce effectiveness and, where appropriate, prompt

change (as cited in Busher and Saran, 1995). Hatton and Smith (1995) went as far as to identify essential issues concerning reflection:

It is necessary to frame and reframe complex or ambiguous problems, test out various interpretations and then modify our actions consequently; it is important to look back systematically on our actions after they have taken place in order to extend our thoughts; while some activities are considered reflective, such as the use of journaling or group discussions following practical experiences, they may not be directed towards the solution of specific problems; and a central factor in reflection is to take into consideration the wider historic, cultural and political beliefs as we seek solution to problems. (as cited in Lord and Lomicka, 2007, pp. 515–16)

More recently, Kuit, Reay, and Freeman (2001) described reflective teachers as those who compare their teaching against their own experience and knowledge of educational theory that predicts what might happen. Invariably, these comparisons highlight differences between theory and practice, and the reflective process readjusts the theory until it accurately describes the practice. Therefore, Kuit and colleagues argued that “reflective practice is about the process of teaching rather than about a simple evaluation of teaching, questioning why we do something rather than how and most important of all, learning by this process” (pp. 130–31).

Lloyd (2002) argued that reflective practitioners impact their professional development by changing their perspectives about the roles of pupils and teachers in the learning process, through self-critical analysis, an acknowledgement of the need to take responsibility for changing and developing their own practices, and creating a more systematic approach to evaluating practice.

Corcoran and Leahy (2003) support the need for teachers to have an inquiry orientation. They believe reflection is not simply a matter of thinking back on actions taken but rather effective teachers look for internal, logical consistency and inconsistency between espoused beliefs and actions taken. When describing this inquiry orientation, Corcoran and Leahy cite “Kotkamp’s cycle of paying deliberate, analytical attention to one’s action in relation to intentions, as if from an external observer’s perspective, for the purpose of expanding one’s options and making decisions about improved ways of acting in the future” (p. 32). Corcoran and Leahy further emphasized social support in reflective practice; this

requires a public testing of private assumptions as well as dialogue with other participants in the teaching-learning context (Corcoran and Leahy, 2003; Leahy and Corcoran, 1996).

Reflection for professional teachers, according to Russo and Ford (2006), is an opportunity to critically evaluate practice against objectives, to see problems in the classroom as both opportunity and provocation to examine and assess the learning that is occurring.

Pultorak (1993) added to the concept of reflection by arguing that reflectivity is a developmental process for novice teachers. He determined that teachers move from thinking about their teaching at the level of practice to the level of theorizing about that practice.

Despite the differing emphases in conceptions of reflective practice, there is, according to Calderhead (1992), some general agreement that reflective teachers are those who are able to analyze their own practice and the context in which it occurs; reflective teachers are expected to be able to stand back from their own teaching, evaluate their situations, and take responsibility for their own future actions.

Agreeing upon and having a better understanding of reflection may motivate teachers to actually participate in the reflective process. However, teachers must also be aware of the different tools they can use to facilitate the process effectively. The remainder of this chapter is dedicated to introducing a variety of tools teachers and students can choose from to facilitate the reflective process.

REFLECTIVE TOOLS FOR TEACHERS AND STUDENTS

Russo and Ford (2006) view reflection as a *tool* for both teachers and students to address problems and learning challenges, deepen their understanding, and generate new insights. In addition to their reflection about their own practice, teachers may provide reflection exercises or assignments, examples, and challenges to enhance other teachers' and students' learning. So the question presents itself, how can teachers reflect, what *tools* can be used to facilitate the reflective process?

Wlodarsky and Walters (2007) provide a framework or path for professional reflection, and although all the components of this framework or path are important to the reflective process, for purposes of this chapter,

the *tool* component is the focus. To understand what role the *tool* component plays in the reflective process, a brief explanation of the entire event path seems necessary. The path consists of a precipitating event, followed by an intentional period of cognitive processing of information. The cognition component serves as the point in that the problem is formulated and disequilibrium occurs, that motivates the individual to then collect data through the use of, selected by *tools* the individual, to move toward a more balanced state. As mentioned earlier in this chapter, numerous studies confirm that *tools* are used to collect data, aiding in bringing the event(s) to reflection (Wlodarsky and Walters, 2007).

Journaling

It should be noted that the literature focusing on the means to reflect is limited; much of the literature focuses on journaling (Maloney and Campbell-Evans, 2002; Tillman, 2003) and portfolios (Davies and Willis, 2002; Ellsworth, 2002; Marcoux et al., 2003). Writing reflective journals facilitates the writer in inquiring into his or her existing assumptions and beliefs by looking at them again, turning them around, and viewing from a different perspective. The goal is to address questions, have a person inquire into his or her thought patterns and actions, and to make connections from prior experiences to new knowledge and find where and how they fit (Daniels, 2002; Spalding and Wilson, 2002).

Boud and Knights (1996) offer journal-like tools to reflect within the classroom setting. These tools include learning journals, also known as personal-professional journals, dialogue journals, or learning portfolios. They require students to keep a weekly account of their experience as learners in the course. Hewson and colleagues (1999) added the incorporation of reflective practice involving students using *written* or *videotaped* journals (as cited in Fyfe, 2002).

The following tools are similar to journaling; however, they seem to take time constraints and/or convenience into consideration in comparison to the traditional approach of journaling. Fyfe (2002) wanted to offer students opportunities to do quick reflections in order to help students focus on internal factors that they can identify as being positive to their learning and to address learning problems or misunderstandings before too much

time had elapsed. These opportunities took the form of reflection bars that students filled in to represent their achieved learning for that class and prompted them to think of factors that influenced their achieved learning score. Reflection bars are yet another tool that can be used to reflect.

Lord and Lomicka (2007) argued that social reflection is beneficial in promoting increased and deeper reflection and that technology use among teachers-in-training provides them with valuable tools. The technology used in their study consisted of e-mails and virtual discussion forums, and the authors believe computer-mediated communication technologies facilitate a transformation from traditional journaling to journaling as a social phenomenon.

Portfolios

Similar in purpose to portfolios, self-assessment schedules are also used as a tool to promote reflection. A completed schedule is a document in that students are required to identify the objectives they have been pursuing during a course, establish criteria for judging the achievement of these objectives, explain what evidence they have that will demonstrate their achievements, make judgments about the extent and quality of their achievements, and report on what further action they need to engage in with respect to any of the objectives (Boud, 1992, as cited in Boud and Knights, 1996).

In addition to journaling and portfolios, there are numerous other means or tools that teachers and students may not be aware of and, in turn, don't use systematically to facilitate reflection of their practice(s). All teachers and students could benefit from making use of the variety of tools available, ultimately improving the teaching and learning process.

A study completed by Wlodarsky (2008) found that the following tools were helpful to college teachers in defining problem(s) and partaking in the overall reflective process. These tools include: (1) peer feedback in that the problem is NOT directly observed (Kuit et al., 2001), (2) peer feedback in that the problem is directly observed (Kuit et al.), (3) journaling (Kuit et al.; Maloney and Campbell-Evans, 2002; Tillman, 2003), (4) student input (Kuit et al.), and (5) shared research through conference presentations and publications.

Peer Feedback

Mastrilli and Sardo-Brown (2002) completed a study focusing on novice teachers' cases being a vehicle for reflective practice. The findings suggested that the writing and discussion of case dilemmas holds potential in helping facilitate relationships (reflections) between novice and mentor teachers.

Known as *peer coaching*, the term is used to describe a process in that two or more colleagues work together to improve their teaching skills by observing targeted behaviors of their partners in the classroom and providing constructive feedback (Daniels, 2002; Kurtts and Levin, 2000). Kurtts and Levin found that elementary education majors participating in their study had an increased understanding of the importance of developing a reflective stance and the benefits of developing collegial support. They argue that peer coaching is a tool that can be used to reflect, resulting in teachers' professional development.

Boud and Knights (1996) also recommend learning partners and learning contracts. With learning partners, students are encouraged to choose another member of the class to act as their partner with whom they discuss ideas that are raised, explore their own interests, and exchange work for comment. Learning contracts require the individual to negotiate with staff members the learning tasks that are meaningful to that particular student. This process helps students become more aware and committed to the task(s) (Boud, 1992, as cited in Boud and Knights). Both are viewed as tools to facilitate reflection.

Student Input

In a study by Wlodarsky (2008), college teachers indicated that student input, in its varied forms, is a reflective tool. Faculty believe that student comments are very important; they learn a great deal from student evaluations as well as direct comments from the students. Additional forms include but are not limited to students' products, course evaluations, and informal student feedback.

Research—Shared and Private

As cited in Daniels (2002), "The main purpose of action research is to bring about an improvement in practice" (p. 55). Henry and Sutton con-

cluded from their 1999 study that action research provides a systematic tool for teachers to find answers to questions they already ask about student achievement. Teachers also gained personal growth as an unexpected outcome of this process (as cited in Daniels, 2002).

Researchers (Dinkelman, 2003; Greene, Kim, and Marioni, 2007; Zeichner, 1999) argued for self-study of teacher education practices as a means and ends tool for promoting reflective teaching. Dinkelman defines self-study as “intentional and systematic inquiry into one’s own practice” (p. 8). Zeichner concurred, “Self-study is probably the single most significant development ever in the field of teacher education research” (p. 8).

Various methods to promote reflection have encouraged professionals to become critical consumers of research, participants in research discussions, and developers of research-based classroom decision making (Cochran-Smith and Lytle, 1992; Zeichner, 1994b). It has been suggested that teachers who engage in action research become more critical about their own practice and attend more carefully to their methods, perceptions, understandings, and their whole approach to the teaching process (Kuit et al., 2001). The above findings also confirm Wlodarsky’s 2008 study on the importance of shared research as a tool to reflect.

Additional Tools Used To Reflect

The remainder of tools mentioned could be used in collaboration with others and/or could be used privately and, therefore, don’t fall into any particular category listed above. As part of a workshop, Haigh (2003) outlined numerous ways or tools to reflect. These include facilitative questioning, thinking beyond first thoughts and taken-for-granted ideas, redefining the problem, challenging the dominant idea, asking five whys, shifting perspectives, identifying unknowns and uncertainties, analyzing explanations, and thinking about unproductive thinking.

Kuit et al. (2001) also cite tools that can be used to facilitate the reflective process. Some of these tools appear to be similar to the above, however, still deserve mentioning due to slight, but important, differences. For example, data strands for the four stages in the process—describe, analyze, theorize, and act—can be used as a tool to further reflection. The critical thinking method includes the identification of a trigger event and the recognizing of a concern that is translated into a definition of the

problem. A synthesis is undertaken by reflecting on what has been learned from the existing knowledge, attitudes, and feelings and a new integrated theory is produced. The critical incident method is similar in that the incident may be significant because of its success or its failure; regardless, the reflection focuses on the question, why was the incident critical?

Another tool, known as the experiential learning method, is based on Kolb's learning cycle in that teaching is the concrete experience and knowledge is created through the transformation of experience. The concept map is also used as a tool to reflect. It is a visual representation of meaningful relationships between concepts in the form of propositions. Finally, storytelling is something that most people do informally on a daily basis with colleagues (Kuit et al., 2001). It can also be done more formally as an aid to reflection.

Wlodarsky (2008) argued that all teachers and, inadvertently, all students could benefit from making use of these tools. If teachers don't use the appropriate tools to collect accurate and pertinent data, they will be limiting their reflective process.

CONCLUSION

Reflection leads to self-knowledge and this is fundamental to the development of our professional practice. According to Kuit et al. (2001), we are often experienced in reflecting on an event when it is novel or painful, but we rarely continue our reflection as our teaching becomes habitual. It cannot be stated enough that with a strong understanding of the concept and appropriate use of tools, the reflective process is effective and teachers must consider its continual use if they desire to develop professionally. Reflective practice is very valuable in regularly enhancing our professional practice.

Teaching is often viewed as a personal attribute rather than a public practice that can be changed and developed. Therefore, reflection may involve personal risk because questioning practice may also question sensitive beliefs, values, and feelings. In sum, reflection may be a threat to our carefully constructed identities as teachers and to the patterns of our teaching practice. At the same time, a great many teachers do want to improve

their practice and the outcomes of their efforts. Reflection is a beginning point for this process of improvement over time.

During the last decade, increasing numbers of teachers have viewed reflection as an essential element of teaching and professional development (Burbank and Kauchak, 2003). Teachers truly believe that reflection is important and crucial to their professional development process. Teachers express enthusiasm for reflection, belief in its possibilities, and concern about the practicalities of it. When several of the concepts of reflection are viewed in combination, a more subtle understanding of reflection is gained. If we don't understand what reflection actually is and how to participate in the actual process effectively, our reflection will be superficial, ineffective; it is hardly surprising that sometimes our students' learning or understanding may be superficial and unsuccessful as well (Thorpe, 2000).

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Examining Teachers' Development through Critical Reflection in an Advanced Master's Degree Program

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ABSTRACT

As part of programmatic longitudinal research, this study examined 52 teachers' reflections to determine growth in their professional development and their understanding of program outcomes. Systematic data collection included reflections written at specific points as the teachers progressed through a sequence of coursework during an advanced master's program. Reflection data were used to provide insight into teachers' thinking, examine program pedagogy and course content, and consider how teachers applied concepts learned in program coursework to their classroom practice. Results demonstrate how reflection data can be used to document teachers' understanding of program-learning outcomes and to examine the knowledge and skills teachers learned during program coursework.

INTRODUCTION

As teacher education institutions are called to become increasingly accountable for the quality of their graduates, professional development programs need to implement effective and systematic practices that document teachers' development and provide concrete evidence of teachers' knowledge. While programs seek to document the nature and results of

their coursework and investigate its impact on teachers and teaching (Darling-Hammond, 2000; Tom, 1999; Zeichner, 2006), teacher reflections have been identified as an effective way to provide evidence of teachers' knowledge. Luttenberg and Bergen (2008) cite numerous reasons for the importance of building reflection, including its role in helping teachers deepen and broaden their competence. Increasing teachers' reflective capacity has been also identified as an essential element in scaffolding and supporting their ongoing professional learning (Liston and Zeichner, 1990; Schön, 1983, 1987).

Meaningful professional development is critical for teachers if they are to become catalysts for student academic success (Haycock, 1998). Federal legislation such as the No Child Left Behind Act (2002) and current performance-based assessment initiatives in the United States associated with accreditation by organizations such as the National Council for Accreditation of Teacher Education (NCATE) have clearly called for colleges of education to provide meaningful professional development to ensure highly qualified teachers for increasingly diverse classrooms (Darling-Hammond, 2006; Zeichner, 2006).

The purpose of this study was to investigate the growth and development in the reflection of experienced teachers during graduate professional development coursework. Specifically, we sought to determine how reflections contained in teachers' program portfolios can contribute to a deeper understanding of the development of reflective practice and teachers' perceptions of program-learning outcomes, with the broader goal of determining how teachers learn. The following research question guided our study: In what ways do the written reflections of experienced teachers demonstrate growth and change and their understanding of program-learning outcomes as they progressed through a sequence of advanced pedagogical coursework?

THEORETICAL FRAMEWORK

Two broad areas provide the theoretical framework for this study: teacher professional development and reflective practice in teacher education. Meaningful professional development has become increasingly critical

for teachers in promoting and improving student academic success (Guskey, 2000, 2002, 2003; Haycock, 1998), and reflection has been identified as one way to help them broaden and strengthen their professional development experiences (Korthagen and Kessels, 1999), as well as their teaching competence.

Professional Development

The process through which teachers learn to make instructional decisions has been found to occur over a lifetime (Kagan, 1992). As teachers engage in professional development, such as an advanced master's degree program, they enter coursework with knowledge from many different sources and teacher preparation programs, multiple backgrounds, varying years of experience, and different needs. To be effective and meet the needs of teachers, professional development must be situated in the work of teaching and must focus on students' thinking and learning (Whitcomb, Borko, and Liston, 2009). In the case of professional development, the students engaged in learning are the teachers themselves.

Teachers need to continue their educational development with carefully scaffolded learning opportunities that bring together theory, research, and practice and build on their experiences in the classroom. Teachers have the benefit of a ready "laboratory," their classrooms, where they can try out new ideas and reflect on the results of their research. Research has shown that teachers particularly benefit from peer support to scaffold their learning. Since they are largely alone in their "laboratories," professional development should provide multiple opportunities for conversation and collaboration. As there is limited empirical evidence that can inform teacher educators on how certain educative experiences affect teachers' long-term development (Anders, Hoffman, and Duffy, 2000), one of the goals of this study is to add to the literature about what constitutes meaningful professional development for teachers.

Reflective Practice in Teacher Education

Before meaningful professional development can occur, teacher educators need to understand more about how teachers learn. Reflection has

the potential to provide a window into teachers' thinking. An assumption often made about reflective practice is that reflection begun during preservice teacher preparation will carry over into the classroom and continue to support the development of one's professional teaching life (Freidus, 1996; Morin, 1995). Where a body of research exists on the use and effectiveness of reflection in preservice teacher education programs (Fendler, 2003; Lyons, 1998; Rodgers, 2002; Ross, 2002), fewer studies have documented reflection with experienced teachers (Fox, White, Kidd, and Ritchie, 2008; Painter, Ritchie, and Fox, 2007). Even highly experienced teachers may require specific experiences, such as critical conversations and collaborative inquiry in a supportive environment, to move beyond descriptive thought and writing (Lyons, 1998; Ross, 2002).

As teacher educators in an advanced master's program that actively promotes the growth of reflective practice (Brookfield, 1995) through coursework experiences, researchers have been engaged in several years of longitudinal research on reflection using teachers' portfolios created in our program (Fox, Kidd, Painter, and Ritchie, 2007; Fox, Kidd, White, and Painter, 2005; Fox, White, Kidd, and Ritchie, 2008). When longitudinal research was initiated, the program drew from the National Commission on Teaching and America's Future (1996) statement about reflection that says teachers should be able to think systematically about their practice and learn from experience. That is, teachers must be able to "critically examine their practice, seek the advice of others, and draw on educational research to deepen their knowledge, sharpen their judgment, and adapt their teaching to new findings and ideas" (p. 75).

As previous studies have shown that teachers' reflections can provide rich and individual portholes into their thinking, researchers contend that teachers' reflections can be used to capture their growth during coursework and provide insight into their approaches to teaching.

The current study investigated the content of teachers' reflections using two program cohorts to determine the connections they made to program-learning outcomes aligned with the propositions of the National Board for Professional Teaching Standards (NBPTS) (www.nbpts.org). It also sought to gain insight into the scope and nature of the growth of teachers' knowledge and ability to reflect critically during program coursework and to identify influences that program experiences have on their teaching practice.

METHOD

The study took place in a large multicultural university on the east coast of the United States. The context for this study is an advanced master's degree program with eight program learning outcomes that are aligned with the propositions of the NBPTS. A Professional Portfolio linked to the program standards is an exit requirement for all program participants and contains the prompted reflections used in this study. This study followed university policies to comply with the Human Subjects Review Board. All participants signed an approved informed consent letter prior to data collection. Analysis was ongoing and iterative throughout the year as the reflections were submitted.

The Eight ASTL Core Principles (Learning Outcomes)

1. Student learning

Teachers are committed to students and their learning.

2. Content knowledge and effective pedagogy

Teachers know the subjects they teach and how to teach those subjects to students.

3. Monitoring student learning

Teachers are responsible for managing and monitoring student learning.

4. Systematic inquiry of practice

Teachers think systematically about their practice and learn from experience.

5. Learning community

Teachers are members of learning communities.

6. Diversity

Teachers attend to the needs of culturally, linguistically, and cognitively diverse learners.

7. Change agent

Teachers are change agents, teacher leaders, and partners with colleagues.

8. Technology

Teachers use technology effectively to facilitate student learning and their own professional development.

Participants

Data for this study were gathered from sets of program portfolio reflections of two cohorts of teachers, $N = 52$, whose range of experience was from 1 to 20+ years of experience in public and private school settings, from preschool through community college. The cohorts consisted of 3 males and 49 females. The ethnicities represented are Asian (2), Hispanic (2), African American (1), and Caucasian (47). During the time of the study, the teachers were engaged in a 12-credit component of the master's program referred to as the Education Core.

Data Collection

Reflections were written to a prompt at designated times in the program coursework; 5 reflections were collected from each teacher, for a total of 260 reflections. Each set of reflections (Reflection 1, 2, 3, etc.) allowed program faculty to analyze teachers' thinking and understanding as they progressed through the program. All reflections were identified by a numeric code by graduate research assistants to ensure confidentiality of the teachers and to support the validity of the study. The reflections were coded and analyzed by reflection (i.e., all of Reflection 1, Reflection 2, etc.) (Maxwell, 2005) and then analyzed across the program and cohorts.

A content analysis was then conducted and a passage count made at each reflection to determine the number of times (passages) each teacher mentioned any of the eight learning outcomes: *student learning*, *content knowledge and effective pedagogy*, *monitoring student learning*, *systematic inquiry of practice*, *learning community*, *diversity*, *change agents*, and *technology*. The researchers reached agreement on the coding prior to recording passage counts and then verified the counts for each reflection after the counts were made. Finally, the passages about the learning outcomes were compared across teachers, then by reflection, and finally across the program.

The term "passage counts" refers to the number of times, or passages, each learning outcome was mentioned or discussed by the teachers. The passages vary in length and consist of a teacher's discussion of that particular learning outcome. The percentages listed beside each of the pas-

sage counts in the tables represent the percentage of passages of each of the eight learning outcomes at Reflection 1, Reflection 2, Reflection 3, and so on.

Data Analysis Procedures

The data were analyzed qualitatively, particularly coding and categorizing (Glesne, 1999; Maxwell 2005). An analysis of the reflection data within and across the program coursework for each of the cohorts (Core I and Core II) showed both general trends and specific information about each cohort and provided a window into what teachers thought about the program learning outcomes. A summary and description of the eight program learning outcomes can be found in tables 11.1, 11.2, and 11.4, which contain the passage count and percentage data for each of the two cohorts; table 11.3 shows the combined data from the two cohorts.

Emergent themes in the data (Coffey and Atkinson, 1996; Maxwell, 2005) pertaining to program learning outcomes and reflective practice were identified and collapsed for further analysis. To ensure consistency and reliability, after each researcher read a set of reflections and noted the emergent levels, researchers met to discuss the findings and to achieve consensus on coding. They met consistently to achieve agreement if discrepancies occurred. Member checks (Maxwell) occurred routinely throughout the analysis process to ensure consistency with interpretations of the passages for each teacher.

FINDINGS

Passage Counts

By examining the reflection data from Core I and Core II, researchers were able to consider trends and characteristics that emerged for each cohort. Tables 11.1 and 11.2 summarize the passage counts and reflection data percentages gathered from the two cohorts. In Reflection 1 data, passages related to teachers' *systematic inquiry of practice* accounted for 22 percent of the passages across both cohorts, with 25 percent for Core I and 18 percent for Core II.

Table 11.1. ASTL Program Core I, Teachers' Connections to the ASTL Learning Outcomes Across the Program

	Reflection Point 1	Reflection Point 2	Reflection Point 3	Reflection Point 4	Synthesis Reflection					
<i>ASTL Theme: # of times this theme was mentioned in student reflection papers</i>										
1. Student learning	12	19%	19	17%	12	12%	5	7%	42	19%
2. Content knowledge and effective pedagogy	3	5%	18	16%	3	3%	1	1%	24	11%
3. Monitoring student learning	6	10%	25	22%	1	1%	3	4%	21	10%
4. Systematic inquiry of practice	16	25%	18	16%	19	18%	11	16%	30	14%
5. Learning community	9	14%	3	3%	17	17%	17	24%	15	7%
6. Diversity	12	19%	9	8%	32	31%	3	4%	38	18%
7. Change agent	4	6%	2	2%	8	8%	28	40%	41	19%
8. Technology	1	2%	21	18%	11	11%	2	3%	5	2%
	63		115		103		70		216	

Table 11.2. ASTL Program Core II, Teachers' Connections to the ASTL Learning Outcomes Across the Program

	Reflection Point 1	Reflection Point 2	Reflection Point 3	Reflection Point 4	Synthesis Reflection
<i>ASTL Theme: # of times this theme was mentioned in student reflection papers</i>					
1. Student learning	5	17	10	10	8
2. Content knowledge and effective pedagogy	7	13	6	11	20
3. Monitoring student learning	16	8	3	5	9
4. Systematic inquiry of practice	11	14	12	8	7
5. Learning community	5	4	22	7	8
6. Diversity	5	7	6	33	9
7. Change agent	2	2	32	10	13
8. Technology	9	2	5	4	2
	60	67	96	88	76

The three most referred to learning outcomes for each of the cohorts, in the order of their occurrence, show that in Core I the majority (63 percent) of the passages were related to *systematic inquiry of practice* (25 percent), *student learning* (19 percent), and *diversity* (19 percent). In Core II, the majority (60 percent) of the passages were related to *monitoring student learning* (27 percent), *systematic inquiry of practice* (18 percent), and *technology* (15 percent). These findings reflect the course content for the first part of the program coursework, *systematic inquiry of practice* and *how students learn*; they also suggest that coursework readings influence teachers' thinking. In addition, the data highlight the possible influence that context and cohort characteristics have on teachers.

Although each cohort made references to systematic inquiry of practice, Core I had a higher percentage of references to *student learning* (19 percent) than Core II (8 percent), whereas, Core II focused more on *monitoring student learning* (27 percent) than Core I (10 percent). The two cohorts differed from one another in their references to *diversity* (Core I, 19 percent; Core II, 8 percent). The differences in the demographic makeup of the teachers' school communities may have influenced the different findings. For example, teacher references to the ethnic and linguistic makeup of their classes varied by the general geographic location and the diversity of the areas in which they taught.

Similarly, teachers also had varying experiences with their use and application of *technology* in their teaching. Teachers in Core II appeared to need more support with their use of technology than teachers in Core I and spent more time on the technological tools used to support their learning. Therefore, it is not surprising to note that the reflections from Core II relating to technology accounted for a higher percent of the passages than those of Core I (2 percent).

In Reflection 2, passages related to *student learning* accounted for the largest percentage for Core II and the third largest for Core I, with 17 percent for Core I and 25 percent for Core II. The majority (57 percent) of the passages for Core I were related to *monitoring student learning* (22 percent), *technology* (18 percent), and *student learning* (17 percent). In Core II, the majority (65 percent) were related to *student learning* (25 percent), *systematic inquiry of practice* (21 percent), and *content knowledge and pedagogy* (19 percent). These findings reflect the program's continued

focus on student learning, specifically related to designing curriculum and assessing student learning.

These findings highlight the influence of context on the cohorts. Teachers in Core I continued to refer to student learning as they had done in the previous reflection, but their comments shifted more to an emphasis on monitoring student learning. The higher percentage of references to *technology* (Core I, 18 percent; Core II, 3 percent) could be attributed to an emphasis on technology by the instructor. Core II continued to refer to student learning but did not emphasize *monitoring student learning* (12 percent) as much as Core I (22 percent). Core II's focus was on *systematic inquiry of practice*. This group also made slightly more references to *content knowledge and pedagogy* (19 percent) than did Core I (16 percent).

During the second half of the program, the sequencing of the last two courses was reversed due to a time delivery factor. Core I took the course focused on diversity and culture first, followed by the course on teachers as change agents. In contrast, Core II took the change agent course first, followed by diversity and culture. The change in course order was reflected in the content of the reflections. For example, in Reflection 3, Core I, which had just completed the diversity course, referred to *cultural and linguistic diversity* in 31 percent of the passages, whereas Core II, which had just completed the change agent course, had a higher percentage of passages related to teachers as *change agents* (33 percent) at that reflection point.

In Reflection 4, this trend was reversed. Forty percent of Core I's passages were related to teachers as *change agents*, and 36 percent of Core II passages were related to *cultural and linguistic diversity*. It is interesting to note that Core I references to *diversity* dropped to 4 percent in Reflection 4, and Core II references to *change agents* dropped to 11 percent in Reflection 4. Likewise, Core I references to *change agent* rose from 8 percent in Reflection 3 to 40 percent in Reflection 4, and Core II references to *diversity* rose from 6 percent in Reflection 3 to 36 percent in Reflection 4. These findings provide further evidence that course content influenced teachers' thinking at least to the extent of how many references were made to the topics addressed in each of these courses.

The Synthesis Reflection was written after all coursework was concluded as teachers were preparing for their portfolio exit presentations.

Prior to writing their synthesis reflection, teachers were asked to read their previous reflections and examine principle coursework assignments completed throughout the program to inform their thoughts for writing their final reflection.

In the Synthesis reflections, teachers indicated which outcomes were the most significant to them at the completion of the program. Core I discussed *student learning* (42 passages, 19 percent), *change agent* (41 passages, 19 percent), and *diversity* (38 passages, 18 percent) the most and *technology* the least (5). Core II discussed *effective pedagogy* the most (20 passages, 26 percent), followed by *change agent* (13 passages, 17 percent), and *monitoring student learning* and *diversity* (9 passages each, 12 percent). *Systematic inquiry of practice* was a consistent focus of Core I teachers throughout the coursework, whereas Core II teachers' reflections tended to be more focused on *content knowledge and effective pedagogy*.

Table 11.3 contains data from the combined cohorts. Although these data enabled us to study general trends across the two cohorts, they did not reflect the individual areas of focus that surfaced for each individual cohort. As shown in table 11.3, the largest percentage of passage counts from the combined set of teachers' reflections focused on *systematic inquiry of practice* at Reflection 1, representing 22 percent of the reflection passages. *Monitoring student learning* followed at 18 percent and *student learning* and *diversity* followed at 14 percent each. When the two cohorts were separated, we saw that while *systematic inquiry of practice* did comprise the greatest number of passages for Core I, with 25 percent, this was not the case with Core II for which *monitoring student learning* received the greatest attention. These differences were also revealed in other reflection points.

Through managing the data by both individual and combined groups, program faculty were able to examine both overall and cohort specific data set trends. Consequently, the potential overall impact of coursework on the teachers, as well as individual cohort characteristics could be considered. In addition to passage count trends, the data showed that their reflections changed in quality and depth as teachers progressed through program coursework. Additional qualitative analysis was used to provide greater insight into the scope, depth, and nature of the reflections at each point in the reflection sequence.

Qualitative Content Analysis

While considering the number of times a learning outcome was mentioned provided a general indicator of how many times and when teachers referred to the eight outcomes in their reflections, the passage counts did not provide in-depth information about the content of the teachers' reflections. Researchers wanted to identify similarities and differences more specifically and understand more about the ways teachers referred to the learning outcomes. By conducting a content analysis of the reflection data, we were able to ascertain that teachers' elaboration and explanation provided a deeper understanding of their connections to the outcomes. It also provided insight into the ways that teachers' reflection changed over the course of the program.

While there were distinct differences in the way individual teachers expressed their understanding of the eight learning outcomes, continuing analysis of the data allowed us to determine that teachers' understandings at each reflection also bore similarities across a cohort. Specifically, the language, terminology used, and the perspectives of the teachers at Reflection 1 showed several similarities among the cohort members at that same time in their coursework sequence. Similar findings occurred in Reflections 2, 3, and 4. The way teachers reflected on a learning outcome in Reflection 1 was very different from their references to that same outcome in later reflections. This trend applied across cohorts.

Another general trend across the course sequence occurred in the language the teachers used. As teachers progressed through coursework, their reflections moved from more general statements at the first reflection without specific reference to application in the classroom, to more specific and extended examples by the end of coursework. Teachers typically included specific examples drawn from their classroom practice. For example, with regard to learning outcome 1, *student learning*, a change in depth and specificity is seen in the following two quotes, the first from a Reflection 1 and the second from Reflection 3.

The following teacher's reflection on *student learning* was representative of the type of reflection found at the early stages of program coursework.

The purpose of my instruction should be focused on student understanding, not meeting the requirement of the SOLs [state Standards of Learning] or a

similar standardized test. The process of instruction is more than simply the evaluation at the end of the unit. Our informal and formal assessments need to inform us as teachers about both what the students currently understand and how to proceed with subsequent teaching and learning. (04051)

Of particular interest in this quote is the teacher's use of the conditional verb tense, "should be focused" because it captures a tentativeness generally noted in teachers' reflections at the program's outset.

Analysis of other reflections among Reflection 1 data showed similar use of the conditional verb tense and other suppositions, such as "It may be a challenge to incorporate activities for many diverse learners . . ." (14051) or "I should be able to attempt to dissect what he [student] is thinking and feeling to help me find . . ." (09051).

As teachers moved through the program, the tone and sophistication of their reflections changed. Responses became more detailed and the teachers drew multiple examples from their classrooms to explain connections to learning outcomes. The examples were also more specific. To provide an example of these changes, researchers compared initial reflections written about *student learning* (outcome 1) with later reflections that were written after coursework emphasized the development of reflective practice. By comparing reflection data content by reflection point, the focus, sophistication, and specificity of language were more developed in Reflections 3 and 4 than in reflections written during initial coursework.

For example, at Reflection 3, teacher 04053 said about *student learning*:

This . . . demonstrated the importance of understanding each and every child as an individual and a whole. It was important for me to take a "funds of knowledge" perspective by learning everything there is to know about my learner. This not only includes his habits and academic behavior, but also I have to gain an understanding of what his home life is like. . . . To be able to maximize our students' real potential, it is imperative that we understand the conditions from which they are coming and how we can help as teachers. For students to have balance or consistency between home and school environments our approach is to understand and then act. (04053)

Other passages during the second half of the coursework provided additional evidence of more detailed and focused reflections. For example, the following quote is a representative Reflection 4 passage by a Core I

teacher, also addressing *student learning*: “When students’ interests guide instruction and performance assessments, or real-life tasks, meaningful learning and trust are more likely to exist in and shape a school” (11054).

Reflection passages that addressed other learning outcomes exhibited similar changes in teachers’ growing depth of reflection across the coursework. The *student learning* outcome was highlighted because teachers referred to it consistently across their reflections. Table 11.4 provides snapshot summaries of two of the learning outcomes, outcome 1 (*student learning*) and outcome 6 (*diversity*), at reflection points as they occurred across the program. These summaries exemplify the types of changes in the reflections across the program.

From analysis of both the passage counts and the content of the reflections, researchers were able to determine similarities and differences in teachers’ connections to the program-learning outcomes. Teachers’ reflections also provided examples of the various ways that teachers were applying program content in their classrooms.

DISCUSSION

To address the focus of our research question on the ways that written reflections of experienced teachers demonstrate growth and change and their understanding of program-learning outcomes as they progressed through a sequence of advanced pedagogical coursework, discussion of the findings address two primary areas: teacher growth and change, and understanding of program-learning outcomes. First, teachers’ reflection data demonstrated growth and change as they progressed through the coursework; however, these changes showed varying degrees of progress. Likewise, teachers’ understanding of program-learning outcomes also showed individual similarities and differences.

While all of the teachers demonstrated progress during the program, findings showed differences in the degree of change and the level of sophistication in teachers’ understanding and application of program content in the reflection data. For example, there were some teachers whose reflections across the Core coursework remained at a description level while other teachers’ reflections revealed a clear connection to course readings and application to their professional practice.

Table 11.4. Example Reflection Point Summaries Across the Program for Learning Outcomes 1 and 6

	<i>RP1</i>	<i>RP2</i>	<i>RP3</i>	<i>RP4</i>	<i>Synthesis</i>
1. Student learning	Strive to make content relevant and meaningful to students, focus on student learning rather than meeting requirements of SOLs, need to know and understand learners, prior experiences of students impact their learning	Need to learn how each student will learn most effectively, content should be meaningful to students, identify essential questions, improve students' understanding of material, identify essential questions, teacher as designer of curriculum	Teacher beliefs can influence student learning, need to examine a student's culture in order to help him/her learn better in school, classroom culture and its impact on student's learning, teacher as a cultural influence on student's learning	Need for school reform to improve how students are taught and how they learn, need to show a commitment to student learning and consideration of various learning styles	Importance of knowing your students in order to help them learn, impact of instructional methods on student learning, commitment to student learning

(continued)

Table 11.4. (continued)

	<i>RP1</i>	<i>RP2</i>	<i>RP3</i>	<i>RP4</i>	<i>Synthesis</i>
6. Diversity	Diverse needs and abilities of students, increased attention to needs of culturally, linguistically, and cognitively diverse students; benefits of teaching using a MI approach and incorporating learning styles theory into instruction	Emotional and developmental diversity in students, cultural diversity, grouping methods, need for differentiation, recognize student learning styles and multiple intelligences	Cultural Inquiry Process, effect of culture on learning, need to be sensitive to cultural differences and influences, how cultural differences impact a student's school experience	Consider culture of schools when making changes, various learning styles of students, needs of culturally, linguistically, and cognitively diverse learners	Taking into account various learning styles and Multiple Intelligences when planning for instruction, effect of culture on student learning, value in understanding students' background and finding ways to embrace diversity in the classroom, benefits of Cultural Inquiry Practice, appreciation and support of diversity

As teachers progressed through coursework, reflection data increasingly provided specific examples of how teachers had incorporated new theories, ideas from course readings, or the reported results from their own research into their teaching. These applications largely followed course content, particularly with regard to diversity and change agency, which were more evident in teachers' reflections after the completion of those courses. This provided additional insight into the impact course readings may have on teachers' thinking. Examining the reflective data within and across cohorts led us to link some of these differences to the varying backgrounds and experiences teachers have had prior to program entry (Anders, Hoffman, and Duffy, 2000). These results have assisted program faculty in updating several assigned readings to promote targeted discussion or provide new perspectives for consideration by the teachers.

As the data showed, by the end of the program, teachers were incorporating reflection in their teaching practice and most were able to reflect at a "deep" level as they actively applied content from coursework into their teaching and drew on their own as well as others educational research, to support decisions in their classrooms (National Commission on Teaching and America's Future, 1996). Some teachers who appeared to make less progress during program coursework than their colleagues did discuss specific program-learning outcomes in their reflections and demonstrated an ability to make connections between assigned readings and their teaching practice. These results align with Luttenberg and Bergen (2008) who cite numerous reasons for the importance of building reflection, including its role in helping teachers deepen and broaden their competence. Moreover, increasing the reflective capacity of teachers has also been identified as an essential element in scaffolding and supporting their ongoing professional development (Liston and Zeichner, 1990; Schön, 1983, 1987; Shulman and Shulman, 2004).

Whitcomb, Borko, and Liston (2009) stated that to be meaningful, professional development must be situated within the context of teachers' educational settings, thus allowing them the opportunity to actively incorporate new knowledge in their classrooms. In this study, teachers' reflections showed a steady trajectory in their ability to apply new learning in their own classroom laboratories. The teachers in this study were able to document their learning and perceptions of course content through systematic and targeted reflections written as a result of coursework

experiences across the program. These data support the work of Korthagen and Kessels (1999) by demonstrating that systematic reflection provided a way for teachers to establish and strengthen connections between course content and their teaching practice.

In this study, portfolio reflections were used by faculty as a tool to examine the nature of teachers' growth and change during program coursework and have assisted program faculty in identifying some of the specific needs of teachers at various stages of their development. Since teachers enter professional development with varying years of experience knowledge from many different sources, teachers' reflections have the potential to inform ways to differentiate instruction for them as they move through program coursework. It was evident from individual reflections that course assignments and research-based readings influenced teachers' development of reflection. Consequently, our findings support the contention that even highly experienced teachers may require specific experiences, such as critical conversations and collaborative inquiry in a supportive environment, to move beyond descriptive thought and writing (Lyons, 1998; Ross, 2002).

CONCLUSIONS AND IMPLICATIONS

This study provides further support for using teachers' reflective writing to study the effects of program outcomes and to consider the impact of advanced coursework on teachers' thinking and reflection. While we acknowledge that a 12-credit course sequence is not an extensive period of time, the results of this study demonstrate how teacher educators can use reflections to examine different teachers' progress in developing reflective capacity. Systematic analysis of teachers' reflections written across a program can also provide important programmatic evidence beyond grades earned in coursework. The study results enabled faculty working with experienced teachers to understand how teachers in an advanced master's degree program change during a sequence of coursework and consider the specific ways that different teachers attain program outcomes.

The effects of cohort culture on participating teachers should be considered in future research, as well as the effect of prior educative experiences on teachers' progress during professional learning. By focusing on

both the general trends across cohorts and the unique characteristics of individual teacher cohorts, teacher educators can use empirical data found in teachers' reflections to learn about how to best organize and provide meaningful professional learning experiences for experienced teachers.

By using reflections to help us understand teachers' thinking and examine our pedagogy and our programs, it may be possible for teacher educators to more closely identify the results of our work and thus be able to ask the hard questions about what our teachers are learning, how they are applying new knowledge in their educational settings, and how we can help them sustain professional learning during their careers.

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IV

TEACHER REFLECTIVITY IN SCHOOLS AND CLASSROOMS

Quality Leaders

Strategies for Guiding Beginning Teachers through Stages of Reflective Practice

Edward G. Pultorak and Martha Young

ABSTRACT

This chapter examines reflection as it relates to novice teachers and how educational leaders might foster reflectivity as they support beginning teachers. The concept of reflectivity may be understood as a developmental process that progresses through specific stages. These four stages are Reflective Person, Technical Rationality and Reflective Technician, Practical Action, and Critical Reflection and Reflective Citizen. Included is a description of each stage as it relates to novice teachers followed by a discussion of how quality leaders might stimulate reflection at each stage. The following recommendations are provided. First, reflective activities are aligned with each stage. Second, when reflectivity activities are designed, developed, or modified, be cognizant of the amount of time associated with the completion of each task. Third, reflection should include guidance from educational leaders. Finally, educational leaders should be provided professional preparation in the dynamics of teacher reflection and how schools can be more reflective environments.

INTRODUCTION

Over the years, educational researchers have investigated a variety of strategies and instructional techniques designed to improve student

learning. However, more recent research clearly suggests that the ability of the individual teacher to understand and implement such techniques and strategies is one of the most important elements in providing quality classroom instruction (Darling-Hammond, 2006). Further, novice teachers need at least a few years of tangible classroom teaching experience to reach their capacity to be effective classroom teachers (Darling-Hammond). When combined, the significance of aiding novice teachers in growing professionally early on so they become effective in their classroom practice and reach a level of confidence that will sustain them throughout their teaching careers becomes evident.

One way to help achieve this is by encouraging educational leaders to design activities that stimulate reflective practice in novice teachers. For example, according to Wassermann (2009), “Teaching requires the wisdom of Solomon, the problem-solving skills of Feynman, and the artistry of Michelangelo” (p. 489). She implies that teaching is primarily a problem-solving and decision-making process that requires careful consideration and thought before instructional decisions are finalized. To emphasize the importance of reflectivity, Wassermann identifies reflective practice for teacher observation and assessment as a way of encouraging novice teachers to be good problem solvers and decision makers for their students.

The primary intent of this chapter is to explore reflectivity specific to beginning teachers and examine how quality educational leaders stimulate reflective practice in supporting beginning teachers. For the purpose of this chapter, educational leaders are school-based administrators (e.g., principals, assistant principals, department chairs, new teacher administrators, and coordinators) who are responsible for the supervision and development of beginning teachers. The importance of quality leaders for novice teachers as well as the significance of stage theory as a model will be discussed.

NATIONAL COMMISSION ON QUALITY LEADERS FOR NOVICE TEACHERS

In 2004, the Association of Teacher Educators (ATE) formed the Commission on Quality Leaders for Novice Teachers with the primary goal of

identifying ways to increase the professional growth capacity of beginning teachers and to explore the qualities that should be demonstrated and practiced by educational leaders to help ensure teaching success and retention of novice teachers. This commission consists of professionals from across the United States, ranging from large urban settings to small rural communities, and is still in the process of addressing these issues. In this chapter, members of the commission share ideas for stimulating reflective growth in beginning teachers.

PURPOSE OF TEACHER REFLECTIVITY

Prior to reflective practice, many teacher education programs appeared to focus on preparing teachers to behave in certain ways with the assumption that these behaviors would have a positive impact on student assessments. Teacher thinking and reasoning skills, the “why” behind selecting particular instructional techniques and making judgments in the classroom to meet the changing needs of their students, simply were not emphasized. The primary goal was to provide smooth and organized instruction. How information was presented and related to the culture and surroundings of the students they were teaching was not paramount. Curriculum was provided and expected to be taught. The purpose of teacher reflectivity is to encourage novice teachers to think beyond the basics of lessons, to question why they teach, what they teach, whom they teach, and, if necessary, how they can improve in an effort to more effectively reach all their students.

With this in mind, it is also important to be cognizant that one’s ability to reflect can be altered by two important elements: time and reflective ability. Classrooms are busy and demanding places requiring a significant time investment in daily routines and instructional events. If reflective activities are not designed to be completed efficiently and with meaning, they are not likely to be completed to their fullest potential. They, therefore, should be carefully designed so novice teachers are able to complete them in small amounts of time and as they relate to specific events. The second element is cognitive in nature. As classrooms are multifaceted and require numerous on-the-spot instructional decisions, the capability to reflect back and grow from previous experiences can be quite difficult,

especially for those new to the profession of teaching. This requires the ability to learn to reflect and develop the necessary skill set.

LITERATURE REVIEW

While the study of reflectivity is well documented in teacher preparation literature, it has not addressed the ways that educational leaders utilize and stimulate reflectivity in beginning teachers. A major premise of this chapter is that quality leaders can improve beginning teacher success and retention if they understand how to nurture reflectivity. For the purposes of our discussion, the framework supporting reflectivity is shaped through Dewey (1933, 1938), van Manen (1977), and Tauer and Tate (1998).

Dewey (1933) provides the initial understanding that reflection is “an active, persistent and careful consideration of any belief or supposed form of knowledge” (p. 9). The connection between reflectivity and experience is further clarified in Dewey (1938):

Experience does not go on simply inside a person. It does go on there, for it influences the formation of attitudes and desire and purpose. But this is not the whole of the story. Every genuine experience has an active side which changes in some degree the objective conditions under which experiences are had. (p. 39)

Dewey’s seminal works define reflectivity as an active process that is based on and influenced by experience. Citing Dewey’s influence, Hatton and Smith (1995) reinforce this perspective:

Reflection may be seen as an active and deliberate cognitive process, involving sequences of interconnected ideas which take account of underlying beliefs and knowledge. Reflective thinking generally addresses practical problems, allowing for doubt and perplexity before possible solutions are reached. (p. 34)

These concepts provide a foundation to further explore reflectivity and how it may influence teaching and learning.

In an effort to clarify the concept of reflectivity, researchers have identified it as stages of reflectivity. This categorizing of reflectivity aids

in establishing benchmarks and expectations that, in turn, implies that reflectivity is a developmental process (Pultorak, 1996). Van Manen (1977) “suggests that reflection occurs at three stages:

1. ‘technical rationality’ in which the teacher is concerned with application of pedagogical knowledge;
2. ‘practical action’ in which the teacher advances beyond the purely instrumental preoccupation with technical rationality, and is concerned with clarifying assumptions . . . underlying competing pedagogical goals;
3. ‘critical reflection’ in which the teacher incorporates moral and ethical criteria into the discourse about practical actions” (cited in Ferguson, 1989, pp. 39–40).

Sparks-Langer, Simmons, Pasch, Colton, and Starko (1990) integrated van Manen’s concepts related to technical reflection, practical reflection, and critical reflection in their study of preservice teachers and found the categories useful in assessing their students’ growth. Categories of reflective stages are valuable in identifying specific activities and strategies relating to reflective practice, and this approach frames our discussion of reflectivity activities to support beginning teachers.

Tauer and Tate’s 1998 study, based on Sparks-Langer and Colton (1991), provides another tiered model of reflective teachers: (1) a “reflective person” whose focus is primarily on self; (2) a “reflective technician” who “tries to understand how the instructional methods he employs affect student learning in his particular context” and (3) a “reflective citizen” who questions the aims of education and “looks at the educational system and its role in society, or even at society as a whole” (pp. 146–47). Tauer and Tate’s categories are less abstract than van Manen’s (1977) because they focus on identifying concrete characteristics of individuals.

Educational leaders are in a unique position to stimulate and support reflectivity in beginning teachers. Pultorak and Young (2008) provide suggestions that are “for school-based administrators that could represent quality leadership for beginning teachers” (p. 30). Several of these relate specifically to reflective practices and focus on providing an organized and effective induction process to provide avenues to support and encourage reflection. Another is to “understand and utilize portfolio development.”

which is a reflective practice strategy examined in the following section (p. 30). Valli (1997) believes that schools, not just the teacher, should “have reflective cultures.”

A reflective culture provides the foundation for teacher thinking to be “confirmed, modified or stimulated to new levels of understanding by reflecting aloud in groups or through shared journals” (Valli, 1997, p. 86). School culture as a whole benefits when educational leaders participate more fully in the lives of novice teachers. As a caution, Smyth (1989) suggests that the restrictive nature of schooling impedes a reflective environment from flourishing. We suggest that school-based administrators who understand the role of reflectivity can begin to ameliorate Smyth’s assertion. These studies examine the nature of the school and may be of particular interest to quality leaders whose purview tends to be the school as a whole.

The insights provided in this brief review of reflectivity literature establish the parameters for our discussion, which will focus on how quality leaders begin to understand the complexities of reflectivity and how they may provide support for beginning teachers through reflective activities. Numerous scholars have studied reflectivity in preservice, and beginning teachers and their works provide additional information (see Cady, 1998; Cochran-Smith, Barnatt, Friedman, and Pine, 2009; Ellsworth, 2002; Ferguson, 1989; Ferry and Ross-Gordon, 1998; Hatton and Smith, 1995; Howard, 2003; Lunenberg and Korthagen, 2005; Parsons and Stephenson, 2005; Pultorak and Barnes, 2009; Roth, 1989; Ward and McCotter, 2004; and Wenzlaff, 1994).

REFLECTIVITY TO SUPPORT BEGINNING TEACHERS

During the past 30 years, educational researchers and scholars have investigated the theoretical foundations and practices surrounding reflectivity. In this discussion of reflective activities to support beginning teachers, the stages of reflectivity discussed in the literature review are used. For the purposes of this discussion, we have mixed van Manen (1977) and Tauer and Tate’s (1998) frameworks, and combined them with information gathered from prior research conducted by authors, to create the following four stages:

- Stage 1: Reflective Person—maintains a primary focus on “self”;
- Stage 2: Technical Rationality and Reflective Technician—concerned with application of pedagogical knowledge and seeks to understand the relationship between instruction and student learning;
- Stage 3: Practical Action—advances beyond the purely instrumental preoccupation with technical rationality, is concerned with clarifying assumptions and underlying competing pedagogical goals, and contemplates how instruction impacts the world of their individual students;
- Stage 4: Critical Reflection and Reflective Citizen—moral and ethical criteria considered by one who questions the aims of education and “looks at the educational system and its role in society, or even at society as a whole.” (Tauer and Tate, 1998, pp. 146–47)

By examining reflectivity in stages, we can begin to understand how to affect reflectivity as it influences teacher growth based on which activities seem to promote the various stages of reflectivity.

Stage 1: Reflective Person

Teacher growth and development are well documented and provide insights about reasonable expectations for beginning teachers. Simply being reflective does not mean that change in perspective or action will occur. Activities that stimulate self-examination and/or situation examination are considered reflective as long as they are purposeful: “Reflection must have a substantive basis” (Roth, 1989, p. 33). When “self” is the focus of reflective activity, the goal may be greater self-awareness, understanding, or it may lead to action designed to reinforce self-concept. Silcock (1994) reinforces the idea of intentionality and cites Mead’s (1932) belief that “reflectivity is vital not only for cognitive restructuring but for composing an internal dialogue with one’s self . . . self-awareness and . . . self-control” (p. 276). This point seems to support the idea that self-reflection is a necessary step in cognitive restructuring.

Activities that enhance self-examination include Baggetun and Wasson’s (2006) discussion of self-regulated learning (SRL) that is “facilitated both by the technology which enables the creation of weblogs and by the content or open writings that are posted on them” (p. 454). Tauer

and Tate (1998) suggest “journal writing or collegial mentoring” (p. 146), and Ward and McCotter (2004) recommend a “dialogic process of carefully considering their self-related concerns” (p. 255). In 1995, Hatton and Smith conducted a study in which “descriptive reflection, dialogic reflection and critical reflection” were identified as effective methods to promote self reflection (p. 37). Bruner (1960) provides a definition of intuition as “immediate apprehension or cognition” (p. 60). This idea of intuitive thinking, “the training of hunches, is a much-neglected and essential feature of productive thinking not only in formal academic disciplines but also in everyday life,” (Bruner, pp. 13–14) may also stimulate self-reflection. Parsons and Stephenson (2005) assert that “students have to be aware of and able to monitor their own thinking, understanding, and knowledge about teaching to be a reflective practitioner” (p. 97). These authors also point out that the solitary nature of teaching may influence how teachers reflect on their practice. Isolation does not promote the idea of community or shared discourse and that may be important in shaping reflective practice. Furthermore, this isolation may be a reason that some teachers do not readily move out of Stage 1.

Additional researchers suggest the following activities as a way of enhancing Stage 1 reflections. Fendler (2003) suggests journals, autobiographical narratives, and life histories to stimulate self-reflection and reflective practice. Butke (2006) recommends constructive dialogues to verbally deconstruct music rehearsals and encourage self-analysis by the novice teacher. Similarly, Ferry and Ross-Gordon (1998) also suggest the use of verbal dialogues, but in the form of think-alouds, as they are more spontaneous and eliminate the delay between thought and expression. Wenzlaff (1994) identified reflective thinking in student teachers’ journal entries, peer coaching entries, supervisor narratives, and student teacher surveys as a way of enhancing self-reflection. One conclusion was that structured questions for journal entries and peer coaching “may produce more reflecting thinking” (Wenzlaff, p. 285) and encourage self-examination.

The activities outlined in Stage 1 tend to focus on studies that help beginning teachers understand who they are as they begin to acquire the knowledge, skills, and dispositions to become effective and satisfied teachers planning to make a commitment to teaching as a profession. The

activities described in Stage 1 are not limited to this stage, and all of them are open to modification or adjustment to use in other stages.

Stage 2: Technical Rationality and Reflective Technician

Dewey's (1938) perspective of the role of experience, "Experience does not go on simply inside a person . . . it influences the formation of attitudes and desire and purpose . . . which changes in some degree the objective conditions under which experiences are had" (p. 39), lays some of the groundwork for Stage 2. Beginning teachers are especially focused on pedagogical knowledge and strive to grasp the role that instruction plays on student learning. They may have well-honed content knowledge, but how to bring that content to life is a challenge. When teachers have moved into Stage 2, they have experiences that prompt them to see beyond self and reflect on the "conditions under which these experiences were had"—to think of their content, classrooms, and students in different ways. Ferry and Ross-Gordon (1998) caution that "expertise does not seem to reside in merely gaining experience, but in how the individual uses experience as a learning mechanism" (p. 107). This is one reason that activities to stimulate reflectivity are important.

Activities that are most related to Stage 2 include those outlined by Smyth (1989), who recommends diaries and journals as a basis for an analysis of teaching. Other strategies to promote the reflective technician are action research, case and ethnographic studies, microteaching and supervised practice, and structured curriculum tasks, as well as oral interviews, journal keeping, narrative and biographies, and reflective essays (Hatton and Smith, 1995). Ellsworth (2002) suggests the use of portfolios to track elementary student growth, which provides insights into individual students. Orland-Barak (2005) also discusses the use of portfolios and the practice of portfolio construction to distinguish between process and product portfolios. The authors question the efficacy of using portfolios as reflective practice because of institutional constraints that dissuade people from going beyond the technical reflective stage. Lemon (2007) supports the use of visual narrative in which teachers used photographs of themselves and their students' work to determine growth and improvement. Tauer and Tate (1998) suggest methods that stimulate reflection in Stage

2 are based in “structured laboratory or field experiences and collegial mentoring” (p. 147). This is perhaps the best way to determine if students are learning from actual instruction.

Of course, it is possible to use a number of activities identified in Stage 1 if they are modified to help the beginning teacher move to the next stage. For example, Hatton and Smith’s (1995) use of “descriptive reflection, dialogic reflection and critical reflection” (p. 37) could be used to reflect specifically on classroom events with a specific goal to gather evidence to support evaluation and then evaluate in reflection circles or learning communities.

Stage 3: Practical Action

Moving from Stage 2 to Stage 3 suggests beginning teachers have begun to develop tacit knowledge about teaching and learning. For example, they may have become aware of the conflict between constructivist pedagogy and the demands of an essentialist standards-driven curriculum. The type of reflectivity that occurs during Stage 3 delves into deeper levels of understanding about what it means to be a teacher and is concerned with how instruction impacts the world of individuals.

Activities that stimulate practical action are teaching journals suggested by Boyd and Boyd (2005). These journals are designed for teachers to deconstruct their teaching and to strive to clarify assumptions about teaching and learning. Roth (1989) describes processes used to stimulate reflection such as questioning, comparing and contrasting, tolerating ambiguity, analyzing, and evaluating, as well as the use of case study and simulation. These suggestions also validate the role of experience in reaching beyond the surface. Korthagen and Vasalos (2005) suggest using a “reflection circle” to go deeper—beyond the surface, thus the concept of *core reflection*. Other types of activities to stimulate Stage 3 are reported in Silcock (1994), who recommends reflection practice stimulated by *metaphor* (Clift, Houston, and Prignanch, 1990); *story* (Elbaz, 1991); *analogy* (Yinger, 1986); *autobiography* (Butt, Raymond, and Yamagishi, 1988); and *cooperative discourse* (Heron, 1985). Stories, as suggested by Elbaz (1991), and autobiography, suggested by Butt, Raymond, and Yamagishi, may be modified to use in Stages 1 and/or 2.

Stage 4: Critical Reflection and Reflective Citizen

Stage 4 is based on the capacity and potential actions that consider moral and ethical criteria in evaluating schooling in a broad sense: it refers to one who questions the aims of education and “looks at the educational system and its role in society, or even at society as a whole” (Tauer and Tate, 1998, p. 147). This is perhaps one of the more difficult stages for novices to attain.

The studies cited to stimulate Stage 4 reflection include Milner (2003) who recommends race reflective journaling. Race reflective journaling is influenced by critical questions such as “How will my race influence my work as a teacher with students of color?” or “What is the impact of race on my beliefs?” Questions that probe teachers’ moral and ethical stances and that challenge the status quo stimulate critical reflection. Howard (2003), like Milner, proposes a series of questions to encourage reflection about the impact of background on race. Tauer and Tate (1998) suggest that Stage 4 individuals would be stimulated through shared journal writing and discussions leading to group reflection. Ross and Hannay (1986) call for a critical discourse that “requires that the unexamined practices and beliefs of teachers and students be subjected to scrutiny and a continual process of revision” (p. 13). They are interested in “emphasizing analytical understanding instead of technical proficiency” (p. 13). This perspective is a major goal in Stage 4.

Many scholars have been critical of reflective practices because they have not led to achieving Stage 4 goals. Ward and McCotter (2004) define reflectivity in beginning teachers and explore “transformative reflection,” which leads to a “fundamental change of practice” and state that reaching the transformative reflection level is “unusual and difficult” for beginning teachers (p. 255). Bullough (1989) cautions that “in and of itself, reflectivity is not necessarily a sufficient or even a trustworthy aim for pre-service education” (p. 15). Pultorak and Young draw the conclusion that fostering reflectivity “needs to be couched in an articulated social vision” (2008, p. 17). Ferry and Ross-Gordon (1998) contrast experienced expert teachers with novices who are “rule driven, slow-paced, noncontextual and highly influenced by observable acts” (p. 101). Fendler (2003) believes that reflective practices should challenge rather than reinforce existing beliefs and suggests that students

do not automatically know what we mean by reflection; often they assume reflection is an introspective after-the-fact description of teaching. Reflection, meant to make teaching and learning understandable and open, has itself been an invisible process to many of our pre-service teachers. (p. 255)

Hatton and Smith (1995) echo Fendler's perspective, and cite barriers that hinder

the achievement of reflective approaches . . . existing preconceptions about teaching as a profession, the essential preconditions which allow student teachers to develop reflective capacities, their possible responses to being required to undertake reflection, and the structural and ideological program milieu with which various kinds of reflecting are being encouraged. (p. 36)

Collectively, these researchers imply that beginning teachers may not have developed tacit knowledge and experience about teaching to enable them to reach all reflection stages. These insights also suggest limitations in developing reflective practice, and this information is important in shaping expectations surrounding the efficacy of reflectivity stages.

QUALITY LEADERS: SUPPORTING BEGINNING TEACHERS

School-based leaders, seasoned and beginning teachers, among others should benefit from understanding reflectivity as it is presented as stage theory in the previous section. From our perspective, the concept of reflectivity may be understood as a developmental process. The relationship between the individual's experiences and capacity for reflection seems clear. We are not talking about experience in the broad sense, but experience that is rooted directly with problem solving, leading to change and growth. This is a kind of purposeful reflectivity.

Based on our discussion of the four stages—Stage 1: Reflective Person; Stage 2: Technical Rationality and Reflective Technician; Stage 3: Practical Action; and, Stage 4: Critical Reflection and Reflective Citizen—we begin to explore and identify specific reflective practices and strategies that would help school leaders build *reflective capacity* in their schools. In

reviewing the four stages, understanding is gained about reflection as an activity because the strategies change with progression through the stages.

In Stage 1: Reflective Person, the emphasis is self-centered. Many beginning teachers typically lack experience in and exposure to the classroom and school that would provide a reflective filter to stimulate deep reflection. The need for control is strong and this is often translated into survival mode control. As Roth (1989) suggests, the goal may be self-awareness rather than reflectivity to address a particular issue or problem. In an effort to build reflective capacity, activities that enhance self-examination such as journal writing (Tauer and Tate, 1998), descriptive reflection (Hatton and Smith, 1995), and opportunities to deconstruct teaching episodes (Butke, 2006) would provide a reflectivity foundation.

Building these opportunities into the teachers' lives through formal and informal mentoring is important, and principals and school leaders can reinforce these opportunities. Establishing learning communities and *reflection circles* would provide a forum for new teachers to share their self-related concerns about themselves and ultimately about their teaching. These environments acknowledge Fendler's (2003) suggestion to use autobiographical narratives and life histories as stimuli for self-reflection. School leaders need to establish realistic expectations for their beginning teachers, especially in terms of understanding the developmental nature of learning to teach through reflection.

Stage 2: Technical Rationality and the Reflective Technician is based on building reflectivity that goes beyond *self* concerns. The Stage 2 teacher has had enough experience to move from the self-absorbed stage (internal control) to examine teaching, learning, and students as a way to gain greater understanding of the complexities of school. Smyth (1989) suggests using diaries and journals to record and analyze teaching. Hatton and Smith (1995), Ellsworth, (2002), and Orland-Barak (2005) suggest portfolio development as a means to build understanding of teaching and learning. Portfolios typically require judgments to select artifacts that represent change and development. They also allow school leaders and supervisors opportunities to see teachers' perceptions of growth. If school leaders would provide release time for mentors and their protégés to observe and critique (based on stated criteria), both parties would benefit from a deeper examination of teaching and learning. Additionally,

building learning communities and reflection circles around teaching issues and concerns (i.e., focusing on specific teaching materials such as standards or the curriculum) would stimulate reflectivity that is experience based. It is also in Stage 2 that school leaders may begin encouraging beginning teachers to participate in professional development activities related to their particular needs and interests.

By the time beginning teachers are moving through Stage 3: Practical Action, teachers have progressed beyond the self-reflective and technical reflection stages to becoming critical judges of their own teaching. Boyd and Boyd (2005) discuss teaching journals that are used to deconstruct teaching with a focus on clarifying assumptions about teaching. Roth (1989) recommends using higher level analytical and evaluative questions to examine teaching. The purpose of activities in Stage 3 is to help teachers acquire skills that deepen their understanding of teaching and learning. School leaders can, during teacher-administrator conferences, build this level by probing more deeply about teachers' beliefs and attitudes about teaching with a focus on change over time. They can also select mentors and other school leaders who are themselves contemplative and knowledgeable about the Socratic Method as a way to stimulate reflection.

Stage 4: Critical Reflection and Reflective Citizen has its focus on the capacity and potential actions that consider moral and ethical criteria in evaluating schooling in the broad sense and mirrors Kohl's stages of development. Milner (2003) recommends that teachers should engage in reflective journaling designed to deepen their understanding of racial and ethnic beliefs. Ross and Hannay (1986) also suggest that teachers at this stage should engage in critical discourse that focuses on "unexamined practices and beliefs of teachers and students" (p. 13). Of all the stages, Stage 4 is the most difficult to develop. The possibility exists that some teachers, regardless of how many years in teaching, may find it challenging to achieve Stage 4.

As stated previously, some scholars have been critical of reflective activities because the term is often undefined or misunderstood (Fendler, 2003) and based on "preconceptions about teaching as a profession" (Hutton and Smith, 1995). Despite the potential difficulties in leading teachers to and through Stage 4, there are activities that school leaders could consider. One of them is in the selection of individuals to serve as mentors and teacher leaders. In this role, these individuals will be exposed to a

range of teacher behavior and beliefs, and this experience will, in turn, likely help shape and refine the mentors' own dispositions and beliefs about teaching. Mentoring may serve as a catalyst for their examination of their beliefs about teaching stimulated by critical analyses of others' teaching. Understanding this transformation is important to share and discuss in mentor preparation programs. This point suggests that induction programs should reflect the stages identified in this chapter, that the mentoring should be progressively more challenging and challenged. This point also suggests the school leaders should "know" the individuals selected to serve in mentoring, that is "know" their attitudes and beliefs about teaching, learning, and schools.

CONCLUSIONS AND RECOMMENDATIONS

The primary foci of this chapter were to examine reflection as it relates to beginning teachers and explore how quality leaders might stimulate reflective practice as they support beginning teachers. The hope is that educational leaders will improve beginning teacher success and retention if they stimulate effective reflection. To this end, novice teachers are provided, early in their careers, a more structured opportunity to grow professionally and reach their capacity to be effective classroom teachers and improve student learning sooner.

Educational leaders, however, first need to better understand how to nurture reflectivity. Often, the restrictive nature of schooling prevents a reflective environment from flourishing. By understanding the role and process of reflection, school leaders can begin to ameliorate this situation.

From our perspective, the concept of reflectivity may be understood as a developmental process that progresses through specific stages. Novice teachers can typically be guided and encouraged through these particular stages on their journey toward becoming reflective practitioners. These four stages include Reflective Person, Technical Rationality and Reflective Technician, Practical Action, and Critical Reflection and Reflective Citizen.

As a result, we offer the following recommendations. First, we suggest that reflective activities be in alignment with stages. For example, in relation to Stage 1, the question could be asked: What reflective activities

might be prescribed to a beginning teacher who is consumed with personal self that might foster reflection at other reflective stages? Or, if a novice teacher appears to be struggling with self-concept, the question might be: What are some reflective activities that might encourage Stage 1 reflections? In other words, the activities could be designed to facilitate and improve a specific problem or difficulty and aid in cognitive restructuring.

Second, when reflectivity activities are designed, developed, or modified, it is critical to be cognizant of the amount of time associated with the completion of each task. If possible, they should be carefully designed to be completed in small blocks of time as classrooms are busy and demanding settings. Perhaps this could help decide the format (electronic, verbal, paper, group, etc.) for completing the reflection. For example, do all reflections need to be completed in an electronic portfolio to reach the desired intent and purpose for the actual reflection? Could they be designed as verbal reflections completed as a recording such as an audio clip? Do they need to be completed independently or can they be conducted with others, as in think-alouds? Further, the most effective format may also be determined based on the strengths, abilities, and comfort zone of the individual novice.

Third, especially early on, reflection should include guidance from the educational leader. For example, Orland-Barak and Yinon (2007) suggest that reflection deepens when guidance is furnished as part of the reflection rather than simply telling novice teachers to reflect with no feedback. For example, for written reflections, short written prompts provided by the reader can be beneficial in guiding future reflections. During verbal reflections (e.g., conferences as part of formal observations), educational leaders could design some questions related to the reflective stages and offer verbal prompts, as needed, if novices are unable to provide an appropriate verbal reflection to a given question. This type of guidance can help an individual to reflect, grow, and contemplate the various reflective stages.

Finally, we suggest that educational leaders be provided professional preparation in the dynamics of teacher reflection and how schools can be more reflective environments that encourage critical thinking and analysis. Reflective environments encourage beginning teachers to think beyond basic instruction and question why they teach, what they teach, whom they teach, and to be more autonomous about how they can grow and improve to meet the demanding needs of all children. This type of

preparation for educational leaders could help ensure that we provide quality leaders for novice teachers.

School leaders are in a position to build their teachers' capacities as reflective practitioners who recognize that reflection can transform teaching. As Valli (1997) suggests, schools, not just the teacher, should "have reflective cultures" because they provide the foundation for teachers' thinking to be "confirmed, modified or stimulated to new levels of understanding" (p. 86). If quality leaders build the school climate around respect and promotion of a reflective stance, teachers and students will learn to value these as ways to understand experience and as ways to promote action for change. Principals and other school leaders can influence how evaluation and assessment instruments are used. If these instruments are designed to reflect the stages, for example, supervisors may evaluate beginning teachers based on realistic expectations of their growth. Quality leadership may well be tied to the leaders' capacity to instill the value of reflectivity through the creation of a reflective culture.

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The Role of Inquiry-Oriented Learning Communities and Protocols in Sustaining and Enhancing Teacher Reflectivity throughout the Professional Lifetime

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ABSTRACT

The purpose of this chapter is to illustrate the power of inquiry-oriented learning communities and protocols to stimulate teacher reflection in intentional and systematic ways, thus making reflection less happenstance and more visible. After learning communities and protocols are defined, the story of one high school learning community's work over the course of a school year is shared, with particular emphasis on the ways the use of a protocol helped to shape the reflection of one teacher within the group. Analysis of the teacher reflection generated in the example indicates three key mechanisms that promote deeper levels of reflectivity: (1) creating conversational and psychic space; (2) returning the gaze to the familiar and unfamiliar; and (3) pushing beyond what is known. Based on the analysis presented, the authors conclude that teacher educators can incorporate learning community work and protocols into preservice and in-service teacher education to enhance and enrich teacher reflectivity throughout the professional lifetime.

For the past century, there has been a plethora of research indicating the importance of teacher reflectivity (see, e.g., Dewey, 1933; Hatton and Smith, 1995; Schön, 1987; Zeichner, 1986, 1996; Zeichner and Liston, 1996). This body of literature indicates that reflection is critical to good teaching and important for teachers to engage in throughout their entire professional lifetime.

The proliferation of educational scholars and researchers advocating for the importance of teacher reflection has led some practicing teachers to question all of the attention reflection has received. After all, good teachers know that all teachers reflect. They reflect on what happened during previously taught lessons as they plan lessons for the future. They reflect on their students' performance as they assess their work. They reflect on the content and the best pedagogy available to teach that content to their learners. They reflect about interactions they observed students having, as well as their own interactions with students and the ways these interactions contribute to learning. Good teachers reflect all day, every day, while *in* the act of teaching and long after the school day is over *on* the act of teaching. So, teachers wonder, "What's the big deal about reflection?"

The first dilemma that practicing teachers face relating to reflection is that they hardly have any time to do it. In the busy, complex life of teaching, reflection is something that occurs most often in an unplanned way—on the way to the teacher's room for lunch, when a teacher can chat with a colleague during a special such as art or music, when the students are engaged in an independent activity, on the drive home, in the shower, during dinner—wherever and whenever teachers can grab a moment. Few teachers have a planned reflection time (Dana and Yendol-Hoppey, 2009).

The second dilemma faced by practicing teachers related to reflection is it often occurs in isolation from other professionals. There have been numerous discussions in the literature about teacher isolation, depicting a lonely profession in which teachers close their classroom doors and have little interaction with other teachers in their buildings (see, e.g., Flinder, 1988; Lieberman and Miller, 1992; Lortie, 1975; Smith and Scott, 1990). When teachers work in isolation, reflection is not visible. The daily reflection teachers engage in is not observable to others unless it is given systematic form or structure.

As a result of recognizing the need for planned, intentional, systematic reflection to be built into a teacher's day so that this vital cognitive activity does not occur in a happenstance manner, as well as giving reflection a form or structure so that the knowledge generated can become public and shared with other teaching professionals, the concept of professional learning communities has been introduced into many school systems throughout the nation. This is evidenced in the increasing presence that professional learning communities have gained in state and national

conferences (see, e.g., Association of Teacher Educators, 2009; National Staff Development Council, 2009; American Educational Research Association, 2009).

WHAT ARE PROFESSIONAL LEARNING COMMUNITIES?

Professional learning communities (PLC) serve to connect and network groups of professionals to do just what their name entails—*learn* from practice. The concept has gained prominence in the last decade in education literature as a promising practice to help schools improve. For example, in *Professional Learning Communities at Work*, Dufour and Eaker (1998) argue, “The most promising strategy for sustained, substantive school improvement is developing the ability of school personnel to function as professional learning communities” (p. xi).

The concept of professional learning communities took hold across the nation as many top scholars and leaders in education, including Darling-Hammond and McLaughlin (1995), Fullan (2001), Senge (1990), and Hargreaves (1994), claimed that schools must become “learning organizations.” However, according to Whitford and Wood (2010), there is a stunning lack of clarity about what actually is being proposed. “A wide variety of distinct professional development approaches, school social groupings, and change and improvement strategies appear in the literature labeled as ‘professional learning communities’” (Whitford and Wood, 2010, p. 2).

While there have been many different iterations of the professional learning community, in this chapter we focus on one particular iteration that holds a great deal of promise for making reflection less happenstance and more visible for practicing teachers—the inquiry-oriented learning community. The inquiry-oriented learning community is defined as:

Small groups of professionals that meet on a regular basis to learn from practice through structured dialogue and engage in continuous cycles through the process of action research (articulating a wondering, collecting data to gain insights into the wondering, analyzing data, making improvements in practice based on what was learned, and sharing learning with others). (Dana and Yendol-Hoppey, 2008, p. 16)

Inquiry-oriented PLCs meet on a regular basis and their time together is often structured by the use of protocols to ensure focused, deliberate conversation and dialogue by teachers about student work and student learning.

WHAT ARE PROTOCOLS?

McDonald and his colleagues (2003) explain the importance of utilizing protocols:

In diplomacy, protocol governs who greets whom first when the President and Prime Minister meet, and other such matters. In technology, protocols enable machines to “talk” with one another by precisely defining the language they use. In science and medicine, protocols are regimens that ensure faithful replication of an experiment or treatment; they tell the scientist or doctor to do this first, then that, and so on. And in social science, they are the scripted questions that an interviewer covers, or the template for an observation. But in the professional education of educators, one could argue that elaborate etiquette, communicative precision, faithful replication, and scripts would prove counterproductive here. Don’t we best learn from each other by just talking with each other? No, we claim. Among educators especially, *just* talking may not be enough. The kind of talking needed to educate ourselves cannot rise spontaneously and unaided from *just* talking. It needs to be carefully planned and scaffolded. (p. 4)

Protocols for educators provide a script or series of timed steps for how a conversation among teachers on a chosen topic will develop.

A variety of different protocols have been developed for use in professional learning communities by a number of noteworthy organizations such as the National Staff Development Council (see, e.g., Lois Brown Easton’s *Powerful Designs for Professional Learning*, 2008) and the National School Reform Faculty (NSRF), who developed one version of a professional learning community called Critical Friends Groups (CFGs). In their work conceptualizing CFGs, the National School Reform Faculty laid much of the ground work for shifting the nature of the dialogue that occurs between and among teachers about their practice in schools, and it is responsible for training thousands of teachers to focus on developing collegial relationships, encouraging reflective practice, and rethinking

leadership in restructuring schools. Further information about NSRF and access to their protocols can be found at www.nsrffharmony.org.

When used within a professional learning community, protocols ensure planned, intentional conversation by teachers about student work, a teacher's dilemma, a lesson to be taught, or other aspects of practice. Different protocols are intentionally selected for use depending upon the topic for discussion that day. Hence, protocols can serve to systematize professional conversation by teachers in a way that shapes reflectivity in more productive ways than reflection that occurs by happenstance.

The purpose of this chapter is to translate theory into practice by illustrating the power of inquiry-oriented learning communities and protocols to stimulate teacher reflection in intentional and systematic ways, thus making reflection visible and valuable to school change and improvement efforts. Hence, the next two sections of this chapter share the story of one inquiry-oriented learning community and the ways their work together unfolded over the school year.

ONE INQUIRY-ORIENTED LEARNING COMMUNITY'S STORY: THE POWER OF THE PROTOCOL

Five faculty members in the English Department at Everglades High School had attended their district's summer training on inquiry-oriented learning communities and, after the training, had developed a sense of intrigue with a professional development process that appeared to have potential to be much more engaging and meaningful than the traditional "sit and get" workshops they all experienced in their years of teaching. These five faculty (Chris, Sherri, Mickie, Joan, and Leanne) agreed to pilot this form of professional development at their high school the following year. Because Leanne had a good deal of experience engaging in action research herself as a result of recently earning her master's degree at a local university and having attended a NSRF Critical Friend Group training the prior spring, she volunteered to facilitate the learning community over the school year.

The group utilized their regularly scheduled department meeting time (the first and third Wednesday of every month) to hold their learning community meetings. As facilitator, Leanne had helped the group identify this

time to meet, as well as establish and maintain norms for their time together, and build a plan that tied to school goals. As the entire high school had been working on integrating technology into instruction, Leanne, Chris, Sherri, Mickie, and Joan all agreed to the following overarching question that would guide their learning community work throughout the year: “What are some promising practices for integrating technology into the English instruction we provide for Everglades High School students?”

Through discussion, each member of this learning community selected a different form of technology to incorporate into their classes and, in collaboration, designed an action research study to understand the ways their particular form of technology was playing out in the classroom. The action research process entailed each group member (1) developing a question or wondering about their technology practice; (2) collecting data to give them insights into their question in the form of student work, reflective journaling, progress monitoring measures, observational notes, interviews, digital pictures, video, surveys, and/or literature; (3) analyzing data they had collected, and (4) taking action for improvement based on what they were learning from the process (Dana and Yendol-Hoppey, 2009).

At subsequent meetings, different learning community members would bring examples of student work generated in their classroom related to their action research, and Leanne would select a protocol to follow to help structure the group’s conversation about that work. Sometimes, the group would agree to read an article about the integration of technology into instruction and Leanne would select a protocol to engage the group in a discussion about the reading. These conversations, a form of early data analysis, typically led group members to think about additional forms of data (other than student work and literature on the integration of technology into instruction) that might inform their action research question.

As April approached, most group members were ready to reflect on their year of implementing technology into their instruction as a whole and help each other develop a big picture understanding of the different strategies they had tried out in their English classes over the year. Leanne suggested that their April meetings be devoted to investigating their entire data set, and through this overall analysis she asked each member of the group to gather the data they had collected throughout the year all in one

The issue/tension/dilemma/problem/interest that led me to my inquiry was _____

_____.

Therefore, the purpose of my inquiry was to _____

_____.

My wondering(s) was, “ _____

_____.

I collected data by _____
_____.

So far, three discoveries I’ve made from reading through my data are:

1. _____

_____.

2. _____

_____.

3. _____

_____.

Figure 13.1. Sentence Completion Activity

place, read through it once or twice, and complete the reflection sheet that appears in figure 13.1.

At their April data analysis meetings, then, each teacher in the group would take a turn sharing and receiving feedback on his/her data analysis reflections using the protocol that appears in figure 13.2. Chris volunteered to be their first presenter.

To illustrate the ways this protocol played out in practice when Chris presented, the next section of this chapter outlines the nature of the reflective conversation. Following this illustration, we end the chapter by explicating the ways this protocol served to shape the reflection that occurred within Chris’s learning community in a more systematic and visible way.

**Data Analysis Protocol:
Helping Your Colleagues Make Sense of What They Learned**

Suggested Group Size: 4

Suggested Time Frame: 25–30 MINUTES PER GROUP MEMBER

Step 1: Presenter Shares His/Her Inquiry (4 Minutes): Presenter briefly shares with his/her group members the focus-purpose of his/her inquiry, what his/her wondering(s) were, how data were collected, and the initial sense that the presenter has made of his/her data. Completing the following sentences prior to discussion may help presenter organize his/her thoughts prior to sharing:

- The issue/dilemma/problem/interest that led me to my inquiry was . . .
- Therefore, the purpose of my inquiry was to . . .
- My wondering(s) was . . .
- I collected data by . . .
- So far, three discoveries I've made from reading through my data are . . .

Step 2: Group Members Ask Clarifying Questions (3 Minutes): Group members ask questions that have factual answers to clarify their understanding of the inquiry, such as, "How long did you collect data for?" "How many students did you work with?"

Step 3: Group Members Ask Probing Questions (7–10 Minutes): The group then asks probing questions of the presenter. These questions are worded so that they help the presenter clarify and expand his/her thinking about what he/she is learning from the data. During this 10-minute timeframe, the presenter may respond to the group's questions, **but there is no discussion by the group of the presenter's responses**. Every member of the group should pose at least one question of the presenter. Some examples of probing questions might include:

1. What are some ways you might organize your data?
2. What might be some powerful ways to present your data?
3. Do you have any data that doesn't seem to "fit?"
4. Based on your data, what are you learning about yourself as a teacher?
5. What is your data telling you about the students you teach?
6. What are the implications of your findings for the content you teach?
7. What have you learned about the larger context of schools and schooling?
8. What are the implications of what you have learned for your teaching?
9. What changes might you make in your own practice?
10. What new wonderings do you have?

(continued)

Figure 13.2. Data Analysis Protocol

Step 4: Group Members Discuss the Data Analysis (6 Minutes): The group talks with each other about the data analysis presented, discussing such questions as “What did we hear?,” “What didn’t we hear that we think might be relevant?,” “What assumptions seem to be operating?,” “Does any data not seem to fit with the presenter’s analysis?,” “What might be some additional ways to look at the presenter’s data?” During this discussion, members of the group work to deepen the data analysis. The presenter doesn’t speak during this discussion, but instead listens and takes notes.

Step 5: Presenter Reflection (3 Minutes): The presenter reflects on what s/he heard and what s/he is now thinking, sharing with the group anything that particularly resonated for him or her during any part of the group members’ data analysis discussion.

Step 6: Reflection on the Process (2 Minutes): Group shares thoughts about how the discussion worked for the group.

Figure 13.2. (continued)

THE USE OF PROTOCOLS TO SHAPE REFLECTION: AN ILLUSTRATION

Over the past several years, Chris had developed a passion for technology. As an early adopter, he was one of the first to own his own Palm Pilot and develop his own website. As he both enjoyed and benefited from the personal use of technology, through the years he slowly introduced a number of technological advances into his instruction of American literature for high school juniors. He believed that the meaningful integration of technology into his instruction held promise for adding variety to the traditional literature discussions he held in the classroom and enriching students’ understandings of the great American novels they covered in 11th grade. Hence, he was thrilled when members of his learning community decided to focus on technology integration during the school year. For his research this year, Chris was exploring the use of weblogs with his honors/AP students to discuss the novel *Moby Dick*.

To gain insights into the ways blogging might enhance in-class discussions, Chris set up a site, reviewed students’ posts, and developed a questionnaire students completed focused on their perceptions of the blogging experience. Chris also saved all of his lesson plans and in-class

work students completed throughout the *Moby Dick* unit. Chris developed a series of blog prompts to initiate the students' participation on the site, and he sometimes assigned responding to the prompt as homework.

He had been collecting and reviewing his data in isolation along the way, when his learning community coach, Leanne, suggested they move beyond isolated reflection on the data and devote their next meetings to collaboratively engaging in data analysis. Chris volunteered to share his data with the learning community first. To prepare for this meeting, he read through all of the data he had collected so far and completed a sheet of open-ended statements (figure 13.1).

Leanne began this meeting by sharing the data analysis protocol (figure 13.2) and reviewing the protocol procedures with the group. She stated, "I know many of you are at a point where you've collected a ton of data, and I think this exercise could really help each of you clarify what your data might be telling you, and where you might go next in your inquiry. Since Chris volunteered to go first at our last meeting, let's get started. Are you ready Chris?"

Chris replied, "Sure, I've been looking forward to this meeting, although I'm not sure you all can help me too much. You see I feel like I'm not really learning anything from my data—this whole blog experience I set out to do isn't really going as I had hoped. I'm afraid it's all a bit of a failure."

"Let's follow the protocol and see what happens," Leanne responded. "You'll have four minutes to share with us where you are with your inquiry. You can use the sentence completion sheet you filled out to help you share about your inquiry in a succinct manner. Four minutes goes quickly. I'll keep time. Let's begin."

"O.K. . . . Here goes nothing!" Chris began, "Well, as you already know, I'm extremely intrigued with technology and that's why I was so glad when we decided this would be the focus of our learning community work this year. Participation in this group has been extremely helpful as I've dabbled with trying blogging out in my classroom this year for the first time. Most recently, I decided to apply student blogging to my unit on the novel *Moby Dick*, as I was not entirely happy with the nature of the discussions we were having in class."

Chris continued, "Sometimes I just don't know how to get students to participate more, dig a little deeper and use higher level thinking skills as

we discuss the novel in class. I thought it might be interesting to see if blogging could make a difference. Therefore, the purpose of my study was to understand how weblogs might support or hinder my students' discussion during class. My wonderings, which you all helped me craft a few months ago, were 'What happens when I add a blogging component to my unit on *Moby Dick* with my 11th grade honors/AP class?', 'In what ways does blogging contribute to my students' understandings of the novel?', and 'What is the relationship between blogging and the application of higher-order thinking skills to literature discussion?'"

Leanne told Chris, "You have one minute remaining," and Chris continued.

"I collected data by setting up a site, printing out and reading all of the posts, giving out a questionnaire to my students about blogging, and saving every bit of paper produced by me and my students during my teaching of *Moby Dick*. So far, one thing I'm discovering from my data is that students are posting, but not necessarily responding to each other's posts. It's like they use the blog to dump their thoughts out, but no one responds to each other. Another thing I'm discovering is that there is great variety in the quality of responses by the students. A few responses are really thoughtful as well as thought provoking, but most responses are so general I have to wonder if the student even read the assigned chapter. It's definitely not working like I thought it would."

Leanne interjected, "O.K. Chris, I'm going to have to stop you there. It's been four minutes." Leanne addressed the group, "In the next three minutes, we get to ask Chris clarifying questions. As a reminder, these are questions that have factual answers."

During these three minutes, members of the group posed the following four questions that Chris responded to:

- Can you tell me more about what the site looks like and how it operates?
- What instructions did you give your students about how to use the blog site?
- Are there instructions for the students on the site itself?
- Have you ensured that all of your students have access to computers to participate?

After Chris's response to the fourth question, Leanne jumped in, "Although I know we may have a few more clarifying questions we might want Chris to answer, it's time for us to shift gears now and ask probing questions. As a reminder, probing questions are worded to help Chris dig deeper into his thinking and his data analysis. One thing to be careful of is disguising a suggestion as a probing question, or disguising your own thinking or opinion as a probing question by starting out with a phrase such as, "Did you think of trying . . .?" or "Did you ever consider that . . .?" At this point, we do not want to offer suggestions to Chris or impose our own thinking on him. Rather, we want to ask questions to help us delve a little deeper into his inquiry and his data. We'll have the opportunity to make suggestions and share our thinking in the next step of this protocol."

Joan began, "What are you looking for when you review the postings?"

Chris answered, "Well, I'm looking for a couple things. First, I'm looking at the responses, kind of with a Bloom's Taxonomy eye. What I mean by that is, are they analyzing, synthesizing, and evaluating in their responses to my blog prompts? I'm also looking not just at how I might categorize their responses using Bloom's taxonomy but also looking at their responses for how they might get scored on Florida Writes, our lovely state test. Of course I want these students to do their very best on this. And as I read their responses, I also can't help but consider how that response might be scored on the AP exam too. I haven't been happy with what I've seen so far."

There was a brief pause and Sherri jumped in, "I remember reading *Moby Dick* in high school and it was very difficult reading. I can't say I have fond memories of it. I'm wondering why you chose *Moby Dick*? Are they required to read that text?"

Chris answered: "Well, no, they're not required to read it. We have a list of books from the state that we can choose from, but you don't have to read every book on the list. I chose it because I consider myself a child of the sea—I grew up myself not far from the ocean. I love fishing and adventure stories, and I like the writing style of the author, so I thought it would be a great novel for the kids. I know it's a challenging read. There's a good deal of internal dialogue the kids have to get through. There's usually a bunch of groans when I first introduce the book. The kids give me a look as if to say, Are you kidding me? But I like the book, and I think it's good for them!"

Sherri responded, “Did you ever think that it might be difficult for the students to relate to this novel and because they can’t relate and it provides some difficult content, their blogs aren’t up to par?”

Leanne interjected, “Hold on a minute. Let me stop everyone for a second. Sherri, that’s one of those disguised questions—you’re really giving Chris your own ideas in the way that question is phrased. Hold onto your own thoughts for the next step, and let’s keep our questions open. Could anyone reword Sherri’s question so it’s a probing question and not a suggestion for Chris?”

Mickie said, “I’ll give it a try. Chris, what factors might contribute to your students’ ability (or inability) to produce quality blog entries?”

“Wow, that’s a great question, Mickie. One factor could be the direction for the blog assignment itself. If the directions aren’t clear, that could affect the quality. Another thing I suppose is me being explicit about what I’m looking for in their entries. Since I’m new to using blogging, I think I had in my head what I wanted to see, but I’m not sure I communicated it well to the students. I guess I also might see more quality blog activity if the content wasn’t so difficult, but that’s a catch-22 situation. I thought the blog activity would be good just for that reason—it would give the students yet another venue to deconstruct a difficult text. I’ll have to think about that some more.”

Leanne took a turn probing, “Chris, you said that one of the things you are looking for in their prompts is higher-order thinking skills. What have you done with your students to help them understand higher-order thinking?”

“Well, I’ve done some instruction with topic sentences, and various activities to help them build on those sentences.” Chris stopped and thought for a minute. “I don’t think I’m answering your question. In reality, Leanne, I don’t think I’ve done much to scaffold their learning and application of higher-order thinking from other class activities to the blog activity.”

Joan was next, “What implications does what you are learning from your data have for your teaching?”

Chris responded, “I am definitely seeing adaptations I could make to the ways I designed the site so it is more effective. I also just assumed that because these kids were 11th grade honors/AP students they would really take off with the blogging, you know, like a duck takes to water. I

also assumed that being bright students their blogs would be so thought provoking that they would automatically be compelled to respond to each other. . . . Those were naive assumptions on my part. You would think that after so many years teaching I would have known better. I can't just teach the content *Moby Dick*, I have to teach the technology, too. I need to teach them what constitutes a quality blog entry, and perhaps not only what constitutes a quality blog entry, but a quality response to a peer's blog."

Leanne finished up with the last question, "Chris, we have time for only one more question, and I think a good one to finish up might be—What new wonderings do you have?"

"There are a lot of things swirling around in my head right now, but one thing that's coming to mind is the development of a rubric for blog responses. If I developed a rubric, I'd want to know the relationship between the rubric and the students' ability to produce blog responses that are indicative of higher order thinking."

Leanne responded, "O.K., thanks Chris. At this point, we're going to move on to the next step in the protocol. Chris, we are now going to discuss your inquiry with each other, as if you weren't in the room. You are to remain silent. You might want to take notes as we talk. You also might want to scoot your chair back a little from our circle and turn away from us just a tad to help you resist the urge to contribute to the discussion."

Chris scooted his chair back from the group as Leanne suggested and took out his notepad, ready to write. Leanne continued by addressing the group, "We are going to talk about Chris's data for six minutes. We should discuss questions such as 'What did we hear?,' 'What didn't we hear that we think might be relevant?,' 'What assumptions seem to be operating?,' 'Does any data not seem to fit with the presenter's analysis?,' and 'What might be some additional ways to look at the presenter's data?' What we're trying to do is deepen Chris's analysis. And Sherri, here's the time you could make suggestions."

Joan began, "I hear Chris say that when analyzing his students' blog entries, he was looking for the higher levels of Blooms Taxonomy in their responses, and most of the responses were not at those higher-order thinking levels. I wonder if Chris made this statement based on his impressions over time, or if he actually sorted his data by Bloom Taxonomy level. He might want to actually sort the blog entries into the categories of knowledge, comprehension, application, analysis, synthesis, and evaluation. He

also might want to sort his blog prompts into these categories as well. He might discover it's not as bad as he thinks. Are knowledge, comprehension, and application questions inherently bad? Especially for a difficult novel like *Moby Dick*, I would imagine the students would need to spend some time in the knowledge, comprehension, and application domains before they are able to discuss the text at a higher level."

Mickie continued, "I also hear Chris say that he was looking at the responses for how they might get scored on the Florida Writes and the AP exam. That was puzzling to me, because I heard nothing in Chris' wondering statements that had to do with student writing. In all the discussions we had about his inquiry at previous meetings, I never remember hearing anything about Florida Writes or the AP exam. Did you?"

Members of the PLC shook their heads.

"This writing thing is totally new. He needs to return to his wonderings to remind himself of what he set out to look for in the first place. He didn't ask, 'How does blogging help students prepare for Florida Writes and the AP test?'

Joan spoke, "Along with that, I was thinking that his students were perceiving the blog site like they might perceive MySpace, or Facebook, or Instant Messenger. They write in a much more informal way in these venues. Why would you expect they'd write like they would for an exam on a blog site?"

Members of the PLC nodded in agreement. Leanne shared, "I think an important part of his data analysis is going to be looking very closely at all of his lesson plans and everything that went into designing the blog site itself. He might want to turn his gaze to focus on the setup—'What did I learn from the way I set it all up?' 'What worked?' 'What didn't?'"

Mickie said, "I didn't hear him talk at all about the questionnaires—did he look at them yet or did he only look at the blog entries themselves?"

Sherri continued, "Alright, I've been quiet long enough. I have to come back to his choice of *Moby Dick*. I can't imagine that's an easy book for the kids to relate to, and that certainly could inhibit their responses. Maybe Chris should try a more accessible novel for 11th graders in the future. I know they're honors/AP students, but *Moby Dick*? There may be better choices on that list from the state."

"Does Chris have to be the one to pick from that list? What would happen if he did a little two minute commercial on each book on the list,

and then his students could vote on the one they want to read,” suggested Mickie.

Joan chimed in, “Or, each individual student could pick the book he/she wanted and Chris could make book blog groups. Does everyone in the class have to be reading the same book at the same time?”

There was a pause while everyone thought. Leanne took this opportunity to look down at her watch and broke the silence with, “We have two minutes left.”

Joan continued, “I think Chris uncovered some of his own assumptions when he was speaking. For instance, Chris noted that just because they were bright kids, he thought they’d take to blogging like ducks take to water.”

Leanne elaborated, “He also thought they’d respond to each other naturally.”

“I think this is one thing he might take into consideration in the design of the blog and his directions for its use,” Sherri recommended. “Maybe the kids need to be required not just to post but also to respond to at least three classmates’s blogs by a certain date . . . or something like that.”

Joan expressed concern, “I worry that Chris is beating up on himself too hard for making some assumptions about advanced learners. He even started out by saying that he didn’t think he was learning much from his inquiry since the blogging was not going as he had planned. Well gosh, I think he’s learning an incredible amount. One thing he is learning is that we all make assumptions based on ability when we plan our lessons. Sometimes the assumptions we make limit our planning. This could even be one of the claims he makes in his findings . . . something like, ‘It is important for teachers to uncover hidden assumptions they hold about their learners that may interfere with the teacher’s ability to introduce something new to the class.’ I know I was thinking about that as he was talking. His inquiry helped me look at myself and the assumptions I make as well. The practice of uncovering our assumptions is a good reminder for us all!”

Leanne agreed, “I think that’s really powerful. It’s important to remember that engaging in teacher research isn’t about finding a new strategy and reporting on the miraculous difference it made to teaching. Although that does happen occasionally, more often that not, teaching is just too complex to have any one new thing a teacher might try in the classroom lead to dramatic improvement for every learner in a short period of time.

But, that doesn't mean that there isn't tons of learning that happens through each inquiry cycle. It seems like Chris has a lot of rich learning to report on! And with that comment, I'm going to have to call time and ask Chris to come back and join us in the circle. Chris, you now have three minutes to reflect on what you heard us say."

"Wow, this was incredible. I have three full pages of notes. Let me just share a few things. First, I really like the idea of sorting the blog entries and prompts by taxonomy level. I haven't done that yet. I do think that would be an interesting exercise. I was thinking it's all about higher-level thinking and that's the only valuable blog response to have. Once I sort, I think I might find some value in using the blog for knowledge, comprehension, and application as well as analysis, synthesis, and evaluation. I'm going to go through my data again and look closely at what exactly is happening at each of those levels, as well as how the lower-level responses might be building blocks for the higher-level responses.

"I also want to say that you're right on about the Florida Writes and the AP test. That did just seem to creep into my inquiry. I think that probably happened because we're getting close to the end of the year, and of course, just like everyone, those tests and my students' performance on them is ever present on my mind. This wasn't the focus of my study, though, so I need to let that one go. There's no need to sort my data by the score a response like that would receive on the exams.

"I do think there's something to the students' application of MySpace, Facebook, and Instant Messaging behaviors to the blog space. I think I even might want to do a few interviews with certain students to see if they perceive my blog site in the same ways they perceive all those social networking sites—wow, that could have some powerful implications for how I adapt my blog site in the future as well as the instructions I give about participation on the site.

"And I have administered and collected the questionnaires, but I just glanced at them. So far, I've really focused my analysis on just the blog entries themselves. I have to go back to my data and look at the questionnaires more closely.

"I have a lot more to say, but Leanne is giving me the time signal, so I just want to thank everyone. I have to admit, I was really skeptical about this whole protocol thing and data analysis at first, but this session has been incredibly helpful. I have so much to consider! Thanks."

Leanne responded with a smile, “Thank you, Chris. You were brave to present first. We will now take just two minutes to reflect on the process.”

Mickie said, “For lack of a better word, this was really cool. The protocol worked well. It kept us focused and on topic, and the time moved quickly.”

Sherri added, “I think it’s hard to distinguish between suggestions and probing questions. I know I had a hard time with that, but when Mickie rephrased my question, I did see that difference, and why it is important to make sure a question is a true probing question and not a suggestion disguised as a probing question.”

Leanne responded, “It’s not easy to develop good probing questions, but it’s a skill we’ll all get better at with time.”

Joan said, “It felt a little weird talking about Chris as if he wasn’t in the room when he was sitting right next to me.” Everyone chuckled.

Chris shared, “You think it felt weird to you—I’m glad I took Leanne’s suggestion and pulled away from the circle a bit. There were so many times I wanted to say something when you were discussing me. I’m glad the protocol wouldn’t let me though. I learned so much by just listening!”

Leanne finished up, “That’s time! Let’s take a quick five minute break and then Joan, why don’t you present next?”

The members of the learning community relaxed. Chris helped himself to a second brownie, Sherri went to the restroom, Mickie purchased a soda, and Joan engaged in some quiet conversation with Leanne as they waited for the others to return. While they momentarily went their separate ways, each member of the learning community had experienced the power of protocols to foster systematic and intentional reflection that afternoon. They eagerly awaited the next round.

AN ANALYSIS OF TEACHER REFLECTION THAT TRANSPIRED IN THE PROTOCOL ILLUSTRATION

An analysis of the professional learning community protocol conversation that transpired in the illustration indicates three key conversational and collaborative mechanisms that promote deeper levels of reflectivity. These mechanisms include creating conversational and psychic space, re-

turning the gaze to the familiar and unfamiliar, and pushing beyond what was known. We will begin unpacking these three mechanisms by exploring how they played out in the illustration and then turn to elaborating on the specific incidences of teacher reflection within the illustration that led to changes in Chris's practice in the conclusion to this paper.

Creating Conversational and Psychic Space

The first mechanism created by the protocol was *creating conversational and psychic space* for Chris to engage with the group. Space in this case refers to a deeply introspective space where closeness and vulnerability allow teachers to move deeper into the analysis of their teaching practice. As indicated, during the conversation structured by the protocol, Chris moved from reflection as a solo activity to reflection as a collaborative activity. By moving beyond a solo to a collaborative activity, Chris capitalized on the *power of listening*, an activity that cannot be accomplished when working in isolation.

Through listening and engaging in collaborative discussion, Chris was afforded the opportunity to learn from others' insights and questions, providing him with a new lens to view his work. Outgrowths of the conversational and psychic space included Chris uncovering new knowledge, the other participants developing new knowledge, and the creation of renewed energy to continue exploring an inquiry that he had initially named as a failure. By creating this space, the group served as critical friends (Bambino, 2002), bringing new professional lenses to Chris's inquiry. This notion of critical friendship recognizes the importance of mutual support and ongoing critical feedback from trusted peers. The protocol provided that kind of support and feedback in a safe environment, allowing deeper levels of reflection to occur.

Return the Gaze to the Familiar and the Unfamiliar

The second mechanism created by the protocol conversation was the ability to *return the gaze to both the familiar as well as the unfamiliar* within his inquiry. First, the protocol allowed Chris to describe his work and tell his own inquiry story. The opportunity to tell one's story can raise questions and unresolved conflicts. Storytelling is a familiar practice to teachers

(Bruner, 1986; Connelly and Clandenin, 1990), but given insight from this illustration, probing the story led to deeper reflection.

Additionally, the structure of the protocol necessitated clear attention to the original question, the data collected as well as data that he could still collect. The conversation also helped him recognize and reflect on the shifting question and new questions emerging within his inquiry. The protocol provided a structure for facilitating collaborative data analysis and provided a springboard for discussion of the implications for teaching practice. These actions suggest that deeper reflection occurred as a result of Chris exploring both the familiar and unfamiliar with the help of his colleagues.

Pushing Beyond

The third mechanism created by the protocol discussion that enhanced reflectivity was the idea of *pushing beyond*. As noted, Chris initially named his inquiry a failure. By working with his colleagues, they were able to help him identify the important things that he learned from his inquiry and helped him consider next steps. For example, through discussion, Chris turns the reflection toward himself rather than focusing on what his students couldn't or wouldn't do. He was able to move past his own story to the students' experiences. The dialogue pushed Chris beyond seeing the limitations to begin contemplating what could be getting in the way of his students' success. In the end, Chris recognizes that just changing the mode of response doesn't necessarily prepare his students for offering the types of responses he is seeking. The protocol enabled the group to help him see what he couldn't see before—the role he played in both keeping his students from being successful and helping his students become successful.

CONCLUSIONS

The three mechanisms discussed in the previous section of this chapter prompted a variety of *incidences of teacher reflection*, creating a number of turns and movements in Chris's thinking about his inquiry. First, Chris identified logistical issues connected to possible complications due to the nature of technology and students' contemporary experiences. As a result,

he contemplated new ways to set up the blog. This was something he was unable to see alone.

Additionally, Chris not only noted the lack of depth of student responses but also came to understand the importance of scaffolding the students through deeper preparation related to how to respond to the various levels of Bloom's Taxonomy prior to the blog activity. He moved toward the idea of creating prompts that would direct the students more specifically to a variety of higher-order responses. The group helped him uncover assumptions he was making related to their readiness, the importance of clarifying expectations to his students, and the need to consider the developmental nature of being able to respond in higher-level ways.

Through the group's questioning, he was also able to consider the importance of student interest in text selection, something that seemed outside of his initial thinking. By encouraging deeper analysis and the collection of additional data, the group helped Chris rethink his approach. Ultimately, this experience provided Chris with renewed energy to focus on what he did learn rather than what he didn't learn from his inquiry, and through reflection he decided on what next steps seemed viable for enhancing the blog activity.

This illustration and analysis demonstrates that inquiry-oriented professional learning communities support teacher reflectivity. Through collaborative inquiry strengthened by the use of protocols, Chris was able to make significant movement and take new turns in his thinking. Hence, the use of protocols can make reflection more systematic and intentional and give reflection a form and structure to bring teachers out of isolated reflection. The process of reflection illustrated in this chapter culminated in new directions for Chris's teaching practices and appears to have deepened his colleagues' ideas of scaffolding and technology use as well.

In sum, inquiry-oriented learning communities and protocols can serve as a powerful force to enhance and continue teacher reflectivity throughout the professional lifetime. We end this chapter by calling for more teacher educators and staff developers to incorporate learning communities and protocol usage into their work with prospective and practicing teachers. In so doing, just like the example of Chris and his colleagues in this chapter, all teaching professionals can experience the power of the protocol and learning in community. This work can help teacher educators and staff developers target and expand the reflective skills of teachers,

leading teachers in a continual process of growth and self-improvement through reflection so they can truly become the best teachers they can be!

As demonstrated in this chapter, inquiry-oriented learning community work and protocols can make reflection less happenstance and more visible, but the extent of their success is dependent upon the careful use and introduction of these tools for reflection into prospective and practicing teacher education. Future work in this area needs to focus on the introduction and expansion of these tools into teacher education venues, as well as research explicating the impact of these tools on teacher performance and student learning.

By adding learning community and protocol tools to the teacher educator's toolbox, the future of reflection in teacher education is filled with promise and possibility. Based on our experiences facilitating learning communities and utilizing protocols, it is clear that these tools help teachers delve deeply into their own thinking about the acts of teaching and learning and in the process, become better teachers, the ultimate goal of all teacher education.

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Using Reflective Journals to Close the Gap between a Vision of Reform and Teaching Practice¹

Donna H. Foss

ABSTRACT

Research objectives were to identify teachers' conceptions of mathematics teaching and learning and ascertain changes in their conceptions and instructional behavior at the end of a three-year professional development (PD) project. These changes were studied through the qualitative analysis of their reflective journals and observations of their teaching to determine the extent that their conceptions and their instructional behaviors exemplified the PD vision. The results include the teachers' conceptions of their own learning being transformed into their conceptions of how middle-level students learn and in line with the expectations of the PD project; understanding mathematical concepts instead of learning rules; applications to problem solving instead of practicing routine procedures; and active lessons involving exploration instead of teacher lectures. Supported by the evidence in their journals and teaching observations, the reflection process narrowed the gap between their teaching practice and the PD vision of reform.

INTRODUCTION

As a means to improve teaching quality and student achievement, professional development projects are pervasive in school improvement plans.

Desimone, Smith, and Ueno (2006) found that policymakers and administrators are focused on PD to address weak teacher preparation and content gaps, and since teachers usually participate in PD on a voluntary basis, teachers with strong mathematical content knowledge are more likely to take sustained PD than those weak in content. This result points to one of several distinctive characteristics of the PD project described herein, the Middle School Mathematics Academy (MSMA), where schools collaborated in the project only if *all* their middle school mathematics teachers participated.

The three-year MSMA project partnered a state educational cooperative with 11 public schools with a shared vision to increase students' mathematics achievement by (1) strengthening teachers' mathematical knowledge, (2) building teachers' proficiency in the use of effective teaching strategies, (3) developing mentor relationships between middle school teachers and university mathematics faculty, and (4) supporting teachers in the implementation of standards-based curricula. There were 32 middle-level teachers and four university faculty mentors in the first year, 62 in the second, and 55 in the third year. PD sessions for the first year focused on deepening content knowledge related to the state mathematics framework. Mentoring activities focused on content, performance assessment, innovative strategies, and technology.

In their review of the role of reflection, Grant and Agosto (2008) suggested that reflection is expected in PD programs and it is influenced in part by collaboration. In the MSMA, the idea was to force the teachers to reflect on their past and present practice as they witnessed others teaching and received feedback on their own teaching. The teachers would then be able to provide challenging mathematical experiences for their students and the students would have a better conceptual base, greater engagement, and would learn and retain more.

PD sessions were held in summers (intensive) and at least four times during each academic year. University mentors collaborated with the teachers through eight site visits the first year and five the second year, involving demonstrations, co-teaching, and pre- and post-teaching conferences. In the second year, the curriculum from the Connected Mathematics Project (CMP) was selected by the teachers and implemented in the schools, following teacher training in the summer. The CMP is a problem-centered mathematics curriculum designed for all students in grades 6

through 8 with emphasis on number, algebra, geometry, measurement, probability, and data analysis (Cain, 2002; Friel, 2005). Major CMP goals include making connections within mathematics and between mathematics and other fields and the real world.

In the third year PD sessions, the teachers formed collaborative groups with whom they analyzed student work, created scoring rubrics, and evaluated selected lessons they had previously implemented with their students. The strength of the project was in the overall structure; teachers were provided the opportunity to select the new curriculum, revise and share their ideas, develop relationships with mentors, and experiment with their own students. The teachers' selection of the CMP curriculum (from others they evaluated) provided the opportunity for ownership of the project and enthusiasm for the implementation.

The objectives of this research were to identify the teachers' conceptions of mathematics teaching and learning and ascertain changes in their conceptions at the end of the three-year project. These changes were studied through the qualitative analysis of their reflective journals and observations of their teaching to determine the extent that their conceptions and their instructional behaviors exemplified the project goals. By reflecting on the gap between the reform vision of the project and their actual teaching practice, in-service teachers could consciously and continuously revise their practice and seek to close that gap (Shulman, 2004).

THEORETICAL PERSPECTIVES

At a time when research in teacher knowledge and instruction is in the forefront, the scope of this study involves the conceptions and instructional behavior of middle-level mathematics teachers. Determining and acknowledging teachers' conceptions of mathematics and mathematics teaching are necessary in any mathematics reform effort. The theoretical perspectives stem from a range of views of teacher knowledge and teacher reflection.

Teacher Knowledge

Shulman (1986) created a framework for discussions of teacher knowledge to include subject matter content knowledge, pedagogical content

knowledge, and curricular knowledge. Pedagogical content knowledge is more than knowing the content of a subject; it is the awareness of the means of teaching this content through various examples and representations. In an effort to integrate content and the teaching process, the PD project focused on mentors modeling research-based mathematics teaching. While middle-level teachers were exposed to subject matter content knowledge, they simultaneously observed demonstrations of methods of teaching mathematics: pedagogical content knowledge. In addition, they used curricular content knowledge to evaluate curricula and then select a particular mathematics curriculum.

Improving Teaching

Improving the middle-level teachers' content knowledge and instructional strategies was a worthy goal for the project, especially since the majority of the participants were initially trained as elementary teachers. The project employed a PD process that included components encouraged by previous research; namely, (1) longitudinal rather than short one-time workshop format, (2) mentors to sustain support, (3) emphasis on pedagogical and mathematical content knowledge, and (4) new instructional behavior, including the implementation of research-based delivery strategies, a standards-based curriculum, and appropriate technology (Anderson and Hoffmeister, 2007; West and Curcio, 2004).

There are cases in literature where teachers have expressed the desire to include such components in their teaching. However, when trained observers visited classrooms, teachers rarely or only sometimes exhibited the instructional behavior targeted by PD activities. For example, Vacc and Bright (1999) stated that teachers may have acknowledged the tenets of reform but were unable to use them in their actual teaching practice due to their level of understanding. In another project, Schuck (1999) reported beliefs about mathematics constrained the teachers' access to new ways of teaching and learning.

The MSMA project intended to change teachers' conceptions of mathematics teaching and learning with approaches based on what Stipek, Givvin, Salmon, and MacGyvers (2001) found; there are substantial associations between teachers' beliefs and their practices. By adding university mentors to support and encourage participating teachers, the project

expected to alter dispositions confirming what Fetters, Czerniak, Fish, and Shawberry (2002) concluded; the beliefs and dispositions of the PD participants and facilitators shape how they interpret and implement the reform vision. In the MSMA, teachers assumed the roles of students constructing knowledge for themselves, guided by university faculty partners (mentors) to adopt a new teaching philosophy and develop a repertoire of new instructional strategies.

Zeichner (1996) claims that improvement in teaching will not occur unless teachers are respected contributors to school-reform programs. Further, he purports that despite the efforts to help teachers become more reflective, teacher education has done little to enhance teachers' roles in school reform. Often, in-service teachers experience school supervisors and administrators dictating reform curricula without teacher input. The PD project described herein enhanced teachers' roles in reform by taking into account their opinions and suggestions and then the school districts acted on the teachers' decision to implement the new curriculum (CMP).

Reflection

It seems the literature is replete with reports on the importance of reflection in preservice teacher education, with less on in-service teachers (Baird, Fensham, Gunstone, and White, 2006; Danielowich, 2007; Zembal-Saul, Blumenfeld, and Krajcik, 2000). To be reflective means the teacher must be prepared to inquire into the foundations of their actions (Sockett, 2008). Howard and Aleman (2008) contend that a critical consciousness requires teachers to reflect on the effect of their practice and see themselves as agents of change. To lead them to engage in this type of reflection, the teachers in this project were given particular journal prompts to encourage them to think deeply about their beliefs and practices.

Fendler (2003) suggests that the meaning of reflection is debatable, and certain reflective practices such as journal writing and autobiographical narratives may include unintended and undesirable effects; for example, when reflection is understood as a turning back to oneself, the reflection may reveal no more than what was originally known. Further, Fendler asserts that practices of reflection may have thwarted past reform efforts. While that may be true, the teachers' voices (journals) in this PD project

and their behaviors in their classrooms (observations) were used to document their initial conceptions of mathematics teaching and learning, their revised conceptions, and the innovation in their classrooms.

In their comparative study, Korthagen and Wubbels (1995) found no indication of a link between reflectivity and innovation. Yet, in their description of a new role for a teacher educator, Korthagen and Kessels (1999) tout the importance of reflection in the process of leading preservice teachers from concrete experiences to dynamic behavioral changes. They advocate a realistic approach first described by Korthagen (1985), involving action, looking back, awareness of essential aspects, creating alternative methods of action, and trial (ALACT).

Extending this idea to in-service teachers, Korthagen and Kessel's (1999) description of the ALACT model is the underpinning of the reflection process in this PD project. The teachers experienced the activities and mentoring sessions (Action), looked back on the activities and their mentors' evaluations (Look back), became aware of the essential aspects (Aware), created alternative methods (Created), and implemented the methods to continue the learning process (Trial). After "Action" in the PD activities, the teachers shared their "Look" and "Aware" stages in their journals and then "Created" and implemented lessons with their students and continued the learning process (Trial) after reflecting on their students' understandings. Thus, reflection became an essential part of the project whether written, verbal, or internal.

The focus of this report centers on teachers' reflections. If reflection is a way to gain insight into teacher development as Korthagen and Kessels (1999) suggest, the analysis of teachers' reflective journals may shed light on the relationship between in-service teachers' perceptions and the changes in their perceptions. This study answers the call by Luttenberg and Bergen (2008) for study on the development of the "breadth and depth" of reflection and the relationship between teacher reflection and their instructional practices.

METHODS AND DATA SOURCES

There are essentially two research perspectives for mathematic education, a conventional one based on quantitative methods; the other, naturalistic,

involving qualitative methodologies where interpretation and meaning are foremost (Brown, Cooney, and Jones, 1990). The qualitative method provides the advantage of learning about teachers' conceptions of mathematics and mathematics teaching and learning. As a source of data to determine the characteristics of changes in their conceptions and instructional behavior, the teachers were asked to keep reflective journals and allow classroom observations of their teaching by a third party (not their mentor). While labor intensive, the journals and observations provide a snapshot of their views of learning and their acceptance or rejection of the reform vision of the PD project.

Journal prompts were designed to solicit their conceptions as in Foss and Kleinsasser (2001). Multiple prompts were given for five journal entries, submitted each year for three years; for example, items 1–8 were prompts every year and items 9–11 were prompts in year 3.

1. If someone were to ask you what mathematics is, what would you say?
2. What does it take for you to learn mathematics?
3. How do middle school students learn mathematics?
4. Describe how you typically taught mathematics prior to your participation in MSMA.
5. Describe any concerns you may have about your capabilities in regard to mathematical content knowledge, instructional strategies, engaging students, assessment, and curriculum planning.
6. Describe, in your opinion, a “good” mathematics teacher.
7. Describe a “poor” mathematics teacher.
8. How has this PD Academy influenced your ability to teach mathematics?
9. Describe and give examples of the mathematical representations that you have taught your students to use in problem solving.
10. What materials/tools have you found the most useful in mathematics teaching and how did you use them?
11. Overall, what are the most important results of your participation in the Academy?

Following Spradley's (1979) model analysis, participants' conceptions of mathematics and mathematics teaching and learning were identified by

reviewing and coding the data using a procedure similar to the Constant Comparison Method (Strauss, 1987). While these data are self-reported, the teachers shared reflections on their teaching, their mentors' teaching, their students' learning, their beliefs about mathematics, and their opinions of the PD project. All qualitative data were downloaded into a computer program (Ethnograph). The coding of the data is a process of sorting to place similar descriptions or quotes together in what Glesne and Peshkin (1992) call "code clumps," thus allowing theory to emerge.

Patterns related to teachers' conceptions were identified with three major themes emerging: defining mathematics, learning mathematics, and teaching mathematics. From their definitions of mathematics, their descriptions of how they learn mathematics themselves, and how middle-level students learn mathematics, teachers' views of mathematics learning were revealed. Through their descriptions of their teaching, mentoring activities, and good and poor mathematics teachers, their conceptions of mathematics teaching emerged.

RESULTS

At the beginning of the first year, teachers expressed three main goals for improvement: learning to engage students in mathematics, developing new teaching strategies, and increasing their curriculum planning skills. Teachers indicated their concerns about their lack of mathematical knowledge and the time constraints that might preclude their implementation of new strategies. The majority described their classrooms as inviting and open to experimentation. In the presentation of the results, their conceptions of mathematics and mathematics teaching and learning will be emphasized including the changes as they progressed from year to year.

Year 1

To reveal changes in teachers' conceptions of mathematics and mathematics teaching and learning, a subset of the journal prompts was duplicated for the first and last journal entries. Particular reflections are highlighted in this report to portray the essence of their conceptions. It should be noted

that the researcher was not a presenter or mentor and pseudonyms were used in reporting the data. A journal citation code such as Y1J4 means the fourth journal entry of Year 1.

Mathematics and What It Takes to Learn It

The view of mathematics described by the teachers at the beginning of the PD project was based mainly on the study of numbers and number patterns pursued in order to solve problems in real-life situations with a small number of teachers focusing on logic and reasoning. In contrast, the last journal entries of the first year referred to logic or reasoning as well as problem solving and realistic applications. For example, Janis stated, “Mathematics is the logical understanding of numbers and how they are applied to everyday life. Mathematics is used in every aspect of our lives. That is one reason that I love teaching it. It is a combination of numbers, problem solving, patterns, reasoning, shapes, designs, and much more. There is something involving math in every area” (Y1J5).

In the first year, the teachers were asked to describe how they learn mathematics themselves. The majority explained that their learning mathematics required practice and repetition, good explanations, demonstrations of examples, hands-on materials, and connections to real life. One-third of the teachers said they learned by step-by-step procedures and studying examples, and another third said it takes patience, willingness, ability, or an open mind.

In the last journal entries of the first year, the teachers emphasized hands-on activities, problem-solving applications, and seeing the relevance to realistic situations in life, with only a few mentioning practice and repetition. For example, Connie said, “It takes more than just a definition or a quick explanation to grasp relationships. Those relationships did not come easy for me . . . for me to understand what I was doing took more than that. I learn by doing explorations or hands-on activities. I need time to try out what I think” (Y1J5).

Though limited in the first year, their own learning shifted to activity-based learning and understanding how mathematics is used to solve problems. The evidence suggests that at the end of the first year, the teachers viewed their own mathematics learning more in line with the PD vision: understanding mathematical concepts instead of learning rules, applications

to problem solving instead of practicing routine procedures, and active lessons instead of teacher lectures.

In their first and last journal entries of the first year, teachers were asked to describe their conceptions of how middle-level students learn mathematics. Initially, approximately half of the participants stated that middle-level students learn by participating in hands-on activities and using manipulatives. About one-third of the teachers indicated that middle-level students learn in different ways and have different learning styles and, therefore, a combination of strategies and multiple methods are needed. While a few mentioned that students need good explanations, practice, or step-by-step procedures, there were several who said that exploration, discovery, working together, relevance to life, or understanding why they are doing mathematics makes the difference in whether they learn or not.

The journal entries at the end of the first year essentially portrayed the same emphasis on hands-on activities, a variety of instructional strategies, and working together to discover or explore relevant problems. For example, Fran stated, “Middle school students learn math through application. Middle school students are an exceptionally hard group to convince of the relevance of learning . . . must be taught skills by making them relevant to their everyday lives. . . . Getting middle school students involved in hands-on activities that involve food, measurement, and patterns that relate to them at their age in addition to teaching them how they will need these skills in the future help to get their attention and help them learn” (Y1J5).

In summary, teachers’ conceptions of their own mathematics learning were transformed into their conceptions of how middle-level students learn. As they experienced new learning in the MSMA project, what the teachers described as needed in order to learn mathematics themselves was expanded to include the same needs of middle-level students; not just good explanations and practice, but instead, emphasis on relevance and multiple strategies that allow exploration and understanding.

Mathematics Teaching

At the beginning of the project, the participants were asked to reflect on their teaching methods. Only a few teachers (8) had previous experience

with the CMP lessons. Most of the teachers portrayed their teaching as based on introducing mathematical concepts or problems by demonstrating examples and then allowing their students practice (observed) before assigning homework. While a few of the teachers mentioned group work, standards-based curricula, or supplementing with hands-on materials, the majority described their teaching as traditional: modeling problems at the chalkboard for the whole class with verbal explanations and little time for the students to interact. These descriptions of their teaching were in marked contrast to their explanations of what middle-level students need in order to learn mathematics (previous section).

While the changes were subtle in the first year, participating teachers moved away from reflections that emphasized *traditional teaching* (lecture, practice, feedback, homework) to a focus on engaging their students in hands-on activities or manipulatives with time to explore and interact with each other like Betty stated, “Gone are the worksheets with 50 problems using the same algorithm. Math that can be used in the real world and requires math reasoning and critical thinking skills. . . . In the future, I will try to make math meaningful to my students. Students need to be challenged and not told step by step what to do. I hope to let my students do more exploring and explaining what they have discovered. I want to be a listener” (Y1J5).

In the first and last journal entries of the first year, the participants were asked to describe, in their opinions, good and poor mathematics teachers. Their initial descriptions of good teaching were focused on the use of innovative instructional strategies, hands-on activities, strong content knowledge, interaction with and among their students, and exploration coupled with discovery of meaningful mathematics. At the end of the first year, the teachers were emphasizing the classroom ethos that included positive environments where all students were interacting with the teacher and each other.

At the end of the first year, the teachers were asked to reflect on how the MSMA had influenced their teaching. The most prevalent theme focused on how the academy had provided new methods, strategies, and ideas about how to teach mathematics using manipulatives and standards-based materials. Furthermore, the teachers gave the academy credit for forcing them to use their mathematical skills, for changing their views of teaching, giving them confidence to try new ways of teaching, and for

providing support throughout the year. For example, Ellen cited, “Overall, the most important results of my participation in the academy are: it has changed my view of how I need to be teaching math. It also has given me the encouragement to try new things. I have a difficult time with change, but with the help of the academy and my fellow teachers, I feel like I have the support system I need to make this positive change” (Y1J5).

In summary, the results of the first year suggested that teachers generally moved from doubts about their mathematical abilities to feelings of confidence and support for one another. With their new focus on classroom ethos, their goals to learn how to engage students, improve curriculum planning, and increase their instructional skills were met at least in part by their participation in the academy.

Year 2

While progress was evident in the second year, the third year will be the emphasis in the balance of this report (next section). However, it should be noted that in the second year, teachers were asked to reflect on their teaching, their mentors’ teaching, and the reactions of their students. Only about 30 percent of lesson descriptions were sufficiently detailed, but all revealed the implementation of the CMP curriculum. Of the adequate lesson descriptions, most involved CMP investigations that led the students to develop mathematical generalizations that in the past the teachers typically told their students at the beginning of the lessons with no opportunities to investigate, conjecture, or generalize. Teachers expressed their delight that their students had developed the mathematical processes themselves through some type of exploration or investigation instead of being told the mathematical *rules* and procedures. For example, after Bea described a CMP lesson, she wrote about how she had changed as a teacher.

I will never be able to teach math the same again. I have loved the way I have seen the CMP reasoning unfold before my very eyes. . . . I have seen how the very bright students have been challenged for the first time by having to discover concepts on their own, and how the failing students have passing grades for the first time as they were given opportunities to experience math concepts. To be able to reach both ends of the spectrum is

the greatest validation. . . . I will continue to teach math with open-ended questions, with situation problems presented to students to discover on their own, and with opportunities to discuss strategies and methods with a peer. I will teach with the new mind set that math is not just about taking notes and practicing problems. I have learned to stress the process for arriving at an answer, not merely the correct answer. (Y2J5)

Even with their definitions of mathematics generally intact, teachers emphasized exploration and time to understand mathematical concepts in their descriptions of how mathematics is learned. In sum, the reflections at the end of the second year described hands-on activities, but with more emphasis on using a variety of instructional strategies and working together to explore relevant problems. In fact, teachers cited the academy as an influence on their teaching as Marcus (certified secondary) stated, “In the MSMA, I have found a way to teach math effectively on a daily basis. The kids are engaged and for the most part learn the concepts. Overall, I feel I have not only helped to show my kids mathematics in a new light, but they have also shown me how to look at math in a new way. It is amazing how much new math that I have picked up by being in the Academy. I feel more effective as a math teacher because I can explain the hows and whys behind the math” (Y2J5).

Year 3

In the third year, teachers analyzed student work and were asked to write about connections they had made between strands of the state curriculum framework, mathematics and another discipline, and the materials and strategies they had adopted. Also, to ascertain changes in their conceptions, journal prompts from the first year were duplicated in the third year.

Connections, Materials, and Strategies

The connections between strands were apparent in the teachers’ journals. Of the 55 teachers, 18 cited connections between the geometry and algebra strands. The number and operations strand was linked to geometry (3), data and probability (6), measurement (7), and algebra (12). The data analysis and probability strand was linked to algebra (4) and geometry (4).

Some even noted that *problem solving* and *graphing* are in all the strands and thus provide connections across the CMP curriculum. Of the 68 citations of connections to other disciplines, 33 were science and 35 were in other areas such as reading, writing, and language arts.

Graphs, tables, equations, or hands-on materials were cited most frequently (84) as examples of the mathematics representations they taught their students to use in problem solving. Others mentioned diagrams, drawings, models, and writing. For example, Paul said, “I use a variety of mathematical representations in my classroom. When teaching equation solving, my students are taught to make rate tables and graphs before they are ever shown how to solve equations with inverse operations. Terms like rate of change and y-intercept are much more obvious if they can relate the information to a table or graph. They have a deeper understanding if they can see things in multiple ways” (Y3J1).

Of the 55 teachers, 30 indicated the graphics calculator as the most useful tool followed by Smart Board, computer, Elmo, and the TI presenter. The concrete materials included pattern blocks, color tiles, fraction strips, color cubes, base 10 blocks, geoboards, and grid paper. The teachers touted the CMP curriculum as the *most* useful because of the approaches to problem solving that involved cooperative groups, questioning techniques, tables, and graphs. To improve their students’ abilities to communicate mathematics, more than 75 percent of the teachers (43) cited that they required students to keep notebooks, give verbal and written explanations for their problem solutions, discuss in small groups, write on hand-held boards or the smart board, or use technology to communicate their solutions. Several commented that meaningful discussions stem from questioning techniques and open-response problems.

Teachers stated the most effective strategies they implemented during the project were cooperative groups and hands-on or visual manipulatives. Other methods mentioned included relating problems to students’ lives, providing time for exploring or investigating, and allowing multiple methods of solving. Rhonda stated, “I have found that students learn more from their own investigation than from my direct instruction” (Y3J5). It should be noted that in the end, only 3 of 55 teachers said *repetition* and *practice* are the ways to learn mathematics and one reported that his students were not capable of learning using the new strategies.

Analyzing Student Work and Student Learning

Teachers were asked to reflect on the impact of their participation in the Standards in Practice (SIP) process of analyzing student work, a PD model rooted in the belief that students can do no better than the assignments they receive (Kennedy, 2007). Of the 55 participants, 45 had positive comments, ranging from the benefits of learning to create rubrics to thinking more deeply about what and how to assess student work. Teachers wrote extensively about their experiences and complimented the opportunity to create and test rubrics, collaborate with other teachers, clarify teachers' expectations of the students, understand the rigor of rubrics in benchmark exams, and critique their own teaching.

All but five of the journals indicated future plans to create, refine, and implement rubrics as a means of grading and providing feedback to their students. They planned to develop rubrics collaboratively with their school colleagues and analyze the problems in advance of assigning them and give students the opportunity to view samples of graded work. Only two teachers were critical of SIP and stated they would not use it in the future.

Teachers were asked to reflect on what they had taught that increased their students' abilities to reason and their most successful problem-solving lesson. They described their implementation of questioning techniques, cooperative learning (groups and pairs), investigations in the CMP curriculum, discovery and exploration activities, using multiple representations, and requiring their students to explain their work in verbal and written form. In fact, every journal contained a citation of a problem-solving activity and many made comments about how their students were developing as problem solvers who find multiple ways of solving.

Defining Mathematics, Learning Mathematics, Mathematics Teaching

Remember teachers' definitions of mathematics were initially based on the study of numbers and their operations; patterns and relationships used to solve problems in realistic situations with little mention of logic and reasoning. At the end of the first year, logic and reasoning did appear more often in their descriptions of mathematics and "everyday life" was replaced in some cases with "universe" or "world."

Moving to the end of the third year, teachers stated definitions of mathematics that demonstrated a broader view, and most included references to problem solving using multiple methods, connections to science, relationships, systems that organize the world, communication, reasoning, language, logic, “way of thinking,” or “everywhere in life.” Many of the brief definitions in the first year were revised to include more detailed descriptions: a comprehensive view of mathematics as a powerful system (tool) for understanding the world. For example, Anna stated, “Mathematics is the field of science that studies relationships in numbers, figures and designs. Mathematics is everywhere in life and not limited to the classroom. It is the most amazing field of science. Nothing else could exist without mathematics” (Y3J4).

In the first and third years of the project, teachers were asked to describe their conceptions of how middle-level students learn mathematics. Initially, approximately half of the participants stated that middle-level students learn by participating in hands-on activities and using manipulatives. About one-third of the teachers indicated that middle-level students learn in different ways and have different learning styles and, therefore, a combination of strategies and multiple methods are needed. While a few mentioned that students need good explanations, practice, or step-by-step procedures, there were also some who said that exploration, discovery, working together, or relevance to life are important.

Journal entries at the end of the third year essentially portrayed the same emphasis on hands-on activities, a variety of instructional strategies, and working together to discover or explore relevant problems, but many more participants (90 percent) indicated hands-on activities, discovery, exploration, or connections to the real world and students’ lives. Three teachers said middle-level students need “practice.”

In the first and third years of the project, the teachers were asked to describe their own teaching methods. Remember, previously, most of the teachers portrayed their teaching as introducing mathematical problems by demonstrating examples and then allowing students to practice before assigning homework. While initially a few of the teachers mentioned group work, standards-based curricula, and hands-on materials, the majority described their teaching as the tradition of modeling problems at the chalkboard for the whole class with verbal explanations and little time for students to interact. At the end of the project, *all* the teachers were

describing how they would teach mathematics with characteristics such as cooperative groups and pairs, relevant to the lives of their students, discovery lessons, explorations and investigations, hands-on materials, students explaining their reasoning, and the CMP curriculum.

Steve: I have been teaching for 33 years, the last 14 of those years have been spent teaching math. The MSMA has changed everything about my teaching style. . . . I have changed from an outdated, dull style of teaching to lessons that actively engage and involve my students during learning. . . . I thought I was almost ready to retire. I was “burned out!” The Math Academy and Connected Math have given me new life. (Y3J3)

In the journal entries of the first year and again at the end of the project, participants were asked to describe their opinions of good and poor mathematics teachers. In contrast to their self-reported teaching methods (lecture, practice, and homework), their initial descriptions of good teaching were focused on the use of a variety of instructional strategies, strong content knowledge, interaction with and among their students, and exploration coupled with discovery. Descriptions in the final journals included the same characteristics with much more detailed explanations of the characteristics of good mathematics teaching that now matched their personal descriptions of how they planned to teach in the future (groups, exploration, discovery).

At the end, they described good mathematics teachers as knowledgeable in content and willing to collaborate with others; good teachers provide problem-solving activities, allow multiple methods, consider learning styles of their students, involve and excite students, allow exploration and discovery, and make mathematics meaningful and relevant to their students' lives. Poor mathematics teachers were described as unconcerned about their students' learning, with characteristics such as requiring memorized facts with no connections to real life. Some mentioned that poor mathematics teachers teach the way they were taught and have no desire to learn new strategies. Their descriptions were transformed from short sentences using *hands-on* teaching jargon to rich descriptions of the teaching characteristics they were seeking in themselves and that they believe middle-level students need in order to learn mathematics.

Characteristics of the learning environment needed by middle-level students that the teachers initially described in the first year had become

the features they developed in their own classrooms. For example, Bea stated in response to a question about how she now teaches mathematics:

By asking students open-ended questions and prompting them to share their ideas and strategies. I have seen how students can solidify their own thinking processes in discovering key mathematical concepts. Through partner work, they discover those concepts, and generate their own learning. I have used these techniques as they were modeled in our math academy training so that I could truly become a facilitator of learning instead of a presenter. The impact on student learning has been very significant as students have retained information longer and become successful in all aspects of the mathematics curriculum. (Y3J1)

Observations of Teaching

One of the evaluators observed the classroom teaching of 20 of those continuing throughout the PD project. The results of the observations revealed the teachers were implementing the CMP curriculum with what appeared to be detailed planning, including activity-based lessons, cooperative groups, manipulatives, probing questions, and crafted discourse that resulted in their students participating with enthusiasm. In fact, their students were testing their ideas, exploring possible outcomes, drawing conclusions, creating their own mathematical statements, graphs, and problems, and freely sharing their results with each other and the teachers.

In summary, the teachers generally implemented the prescribed CMP curriculum and engaged the students in meaningful mathematics, regardless of the students' intellectual levels. It was interesting that the observer reported being unable to determine the students' intellectual levels (advanced, regular, or inclusion) and was surprised when students who had taken the lead in group problem solving were identified (after a lesson) as inclusion students.

Did the Academy Influence Their Teaching?

To determine the influence of the MSMA, the teachers were asked to describe the most significant content knowledge, new understanding,

awareness, or appreciation that developed as a result of the academy. Their journals at the end of the third year indicated that every teacher had a positive experience with some component in the project. Teachers described increases in their content knowledge in algebra, geometry, and probability, and better understandings of the connections between these areas and connections to realistic applications. They expressed the belief that their students need to be active learners in discovery lessons connected to their lives. They reported learning mathematical concepts that support the rules and formulas they had just memorized earlier in life.

Finally, they expressed an appreciation for the advice and ideas from other professionals (mentors and fellow teachers), the importance of being prepared to teach, and the usefulness of creating and implementing rubrics. The comments are too numerous to include samples of each. Suffice it to say that teachers expressed an overwhelming appreciation for the academy and set their future goals on continuing the curriculum, strategies, content, methods, and the philosophy of the PD project. Typical of the responses was Belinda's statement:

The most significant awareness that I have developed as a result of the Academy is my realization that students really do need to be active in their learning. They really do need to participate in activities that help them to make connections with the real world. I already knew that reading comprehension is improved if you can make connections to something you have experienced. . . . I just never thought about the importance of making connections in math. . . . Most importantly, my participation in the Academy has made me more aware of what I need to do to become a good mathematics teacher. (Y3J4)

One of the goals of the MSMA was to establish collaborations. Therefore, a natural question at the conclusion of the project was, "How have you continued your professional development learning community with your colleagues?" Most of the 55 teachers have continued in some way to develop professionally. They cited concurrent planning periods in their schools, workshops on student success, colleagues' observations of their teaching, district meetings on CMP, vertical and horizontal curriculum meetings at the schools, and group meetings to create assessments and rubrics. Three teachers did not continue collaborations.

In essence, teachers described their enthusiasm for project activities and committed to continue the curriculum, strategies, and methods exemplified in the academy. Comments from Simon captured the sense of collaboration:

The Academy has allowed me to continue to build a network of rapport and collaboration with my colleagues . . . our department meets to collaborate on how to differentiate instructions for lessons, and how to devise a purposeful assessment instrument to evaluate student progress. We reflect on instruction and technology implementation that we have learned at the Academy. We connect our lessons to the standards examined through the Academy, and reflect on applicable resources and strategies for instruction. . . . As we explore new content, a teacher and I begin to reflect over the goals of a lesson, and ask the question what I could do to improve the instruction for the next class. We communicate ideas together to gain feedback on how we should approach future lessons. The Academy has taught us how to better reflect on student learning. (Y3J4)

In summary, the MSMA teachers moved from doubts about their mathematics abilities to feelings of confidence and support for one another. They established collaborations with other teachers and transformed their classrooms into interactive problem-solving investigations centered on the discovery learning of CMP. Their conceptions of how they learn mathematics themselves had evolved into their conceptions of how middle-level students learn mathematics and, thus, converged with their conceptions of good mathematics teachers. They described their resolve to implement the curriculum with detailed planning and preparation, activity-based lessons, cooperative groups, manipulatives, and conscientiously designed questioning techniques and rubrics with the commitment portrayed in Reece's comment, "Middle school math can be very complex, and a lot is expected out of middle school math students (and teachers). It is a process of learning, trying, failing, succeeding and persistence that I intend to continue" (Y3J4).

DISCUSSION AND CONCLUSION

The ALACT model described by Korthagen and Kessels (1999) was exemplified during the MSMA project. From the first year forward, teachers

experienced PD activities (Action), reflected on their conceptions of mathematics teaching and learning (Look back), and with their new awareness of what it takes to learn mathematics (Aware), they implemented mathematics lessons designed for their students to develop mathematical concepts through explorations (Create). They continued their learning by reflecting on what transpired with their students in the classroom (Trial). As this model of reflection was repeated for three years, the majority of the teachers demonstrated their adoption of the content and strategies of the project.

The results are similar to what Wise, Spiegel, and Bruning (1999) found in their use of reflection to evaluate a PD project in mathematics and science; there is a clear link between PD activities and teachers' classroom practice. The analysis of the journals contributes to the record of how reflection can inform teaching practice and the evaluation of PD projects. Such analyses can lead to an understanding of what teachers learn in PD as called for by Kazemi and Hubbard (2008) in their study of designing and evaluating PD.

Wayne, Yoon, Zhu, Cronen, and Garet (2008) contend that conducting experiments in PD programs will provide researchers with control over the sample size, treatments, and contexts of the study. While this study was obviously not experimental, it is a case that may be more typical of grant-funded PD projects where the characteristics of a true experiment are not feasible. Given the complexities of the management of such a project, the results add to the literature regarding the process of reflection and teacher learning by focusing on the changes in the teachers' perceptions over the three-year period as seen in their journals and observations of their teaching. (Changes in content knowledge and student achievement scores are deferred to a future report.)

Fendler's (2003) suggestion that certain reflective practices such as journal writing may include undesirable effects markedly contrasts with the evidence in the teachers' voices (journals) in this PD project and their instructional behavior in the classroom (observations). Their initial conceptions of mathematics teaching and learning were generally converted to the reform vision of the project. While Fendler asserts that practices of reflection may have thwarted past reform efforts, MSMA teachers' journal reflections indicate their implementation of the reform curriculum and adoption of the classroom ethos emphasized in the PD vision. In fact, the results of this project could motivate even small, distant school districts

and their local education agencies to form PD partnerships with universities, funded by one of the multiple school improvement grants that may be available for mathematics and science.

Future research should include returning to the classrooms of at least a random subgroup of the 55 MSMA teachers to determine if there is a gap between the reform vision of the PD project and the resulting teaching practice (Shulman, 2004). As the possibility Shulman suggests, would we find frustrated teachers, disenchanted with a reform vision, or would we find the gap narrowed or closed and the vision of reform significantly exemplified in their teaching practice, not just proclaimed in the written word?

NOTE

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The Role of Professional Teaching Standards in Teacher Reflection

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ABSTRACT

This chapter examines how professional teaching standards developed by the National Board for Professional Teaching Standards can serve as a framework for guiding systematic reflection on teaching practice. The overall results of a longitudinal study that examined the impact of the National Board Certification process on teachers' classroom assessment practices are presented. Three cases from the study provide illustrations of how the teaching standards and certification process can be used to guide the development of practices through a process of analytic reflection. One case shows how, in the absence of such guidance, development of practice can be stalled.

THE ROLE OF PROFESSIONAL TEACHING STANDARDS IN TEACHER REFLECTION

This chapter examines how professional teaching standards developed by the National Board for Professional Teaching Standards (referred to throughout as the National Board) can serve as a framework for guiding teachers' systematic reflection on practice. We present the overall results of a longitudinal study that examined the impact of the National Board Certification process on teachers' classroom assessment practices and

then focus on three cases from the study. The cases illustrate how the teaching standards and certification process can be used to guide the development of practice through a process of analytic reflection. The cases also show how, in the absence of such guidance, development of practice can be stalled.

We write this at a time when federal policies tying federal education funding to the enactment of standards and accountability measures have propelled a standards-based movement. Consequently, standards in K–12 education have gained a strong foothold across nearly all states, with 49 states having adopted curriculum standards in the core content areas (Education Week, 2006). Forty of these states have also written professional development standards for teachers (Education Week, 2006), and as of 2003, at least 34 states have adopted the Interstate New Teacher and Support Consortium (INTASC) performance standards for beginning teachers (Farkas et al., 2003).

Given the various meanings of standards in education practice and policy discussions, we want to emphasize that this chapter is focused on the teaching standards that provide an overarching framework for what teachers should know and be able to do. We argue that teacher reflection on practice should be guided by a vision of teaching in order to address the question of reflection *on what* and *to what end*. This is not an argument for assessing whether teachers are applying “best practices” or maintaining the integrity of particular teaching methods. Rather, we argue that professional standards for teaching provide teachers with a framework for what accomplished practice entails and support reflection that is analytic in nature.

NATIONAL BOARD TEACHING STANDARDS AND CERTIFICATION PROCESS

The National Board was created in 1987 with a mission to “establish high and rigorous standards for what accomplished teachers should know and be able to do, to develop and operate a voluntary national system to assess and certify teachers who meet those standards, and to advance related education reforms—all with the purpose of improving student learning” (Baratz-Snowden, 1990, p. 19). To achieve National Board Certification, candidates must complete a rigorous two-part assessment.

The assessment includes a portfolio completed by the teacher that incorporates student work samples, videos of teaching, and extensive written analyses and reflections based upon these artifacts. The portfolio allows teachers to present a picture of practice as it is shaped by the particular needs of the teachers' students and the context of the school. The assessment also includes a set of exercises that allow candidates to demonstrate both content knowledge and pedagogical content knowledge in tasks such as analyzing teaching situations, responding to content matter prompts, evaluating curriculum materials, or constructing lesson plans.

National Board assessments are specific to content area and student age groupings. Thus, each assessment represents a specific certificate area with its own set of teaching standards. Each set of certificate area standards describes what accomplished practice encompasses. Some standards are common to all certificates, such as knowledge of subject matter, creating supportive learning environments, assessment of learning, and reflection on practice. However, standards are written to exemplify the unique characteristics of both the content area and student development for the specific certificate. The study described in this chapter specifically examines the *assessment* standard for the mathematics and science certificates at both the adolescence and young adult and the early adolescence levels.

The National Board Certification process offers a promising site for investigating the role of analytic reflection on practice in light of recent evidence that it may serve both as a tool for *identifying* more effective teachers (Bond et al., 2000; Cavalluzzo, 2004; Goldhaber and Anthony, 2005; Smith et al., 2005; Vandevort, Amrein-Beardsley, and Berliner, 2004) and as a means for *developing* accomplished teaching. Studies examining teachers' reactions to the National Board assessment process, along with testimonials from individual teachers, have consistently reported teachers becoming more conscious of their teaching decisions and changing their practices as a result (Chittenden and Jones, 1997; Sato, 2000; Tracz, Sienty, and Mata, 1994; Tracz et al., 1995).

A common thread running through the research is teachers' reported change in their understanding of assessment in their classrooms. For example, Athanases (1994) reported that almost 90 percent of the teachers in his study indicated that their classroom practices improved as a result of their participation in the National Board portfolio assessment process. In

particular, teachers felt their ability to assess student learning improved. In a longitudinal, quasi-experimental study that investigated learning outcomes for high school science teachers who pursued National Board Certification, Lustick and Sykes (2006) found that the teaching standard for assessment was one of the most significant areas of learning for teachers.

Ingvarson (1998) suggests that a system of professional development grounded in a set of professionally defined standards offers a clear vision of what teachers should be improving through professional development. The National Board Certification process offers teachers an opportunity to engage in reflection and analysis of their teaching practices using rigorous standards as “tools for critique” (p. 137). Further, professional development based on standards is “acknowledgment that, as in any profession, professional development is more than keeping up with policy changes made by governments and employing authorities” (p. 129). Rather, professional standards “provide goals for professional development that constitute a stable, challenging, and long-term agenda for professional development” (p. 130). Ingvarson identifies the National Board Certification process as exemplifying a professional development system that offers the following key components: teaching standards; valid performance assessments leading to professional certification; an infrastructure for professional learning; and incentives and recognition for professional certification.

STUDY DESIGN AND OVERALL RESULTS

The cases presented in this chapter are drawn from a larger study that examined the impact of the National Board Certification process on teachers’ classroom assessment practices (Sato, Wei, and Darling-Hammond, 2008). Using a longitudinal, comparison group design, the study examined National Board candidates’ assessment practices over three years—a year prior to pursuing National Board Certification, a year of candidacy, and the post-candidacy year, along with a comparison group of teachers who were interested in pursuing National Board Certification but were not candidates during the study. Nine National Board candidates in middle and high school science and mathematics and seven similarly experienced non-National Board teachers in the same fields participated in all three years of the study. Evidence of teachers’ practices included videos of

teaching, lesson plans, and student work, as well as teacher interviews and student surveys.

Based on the literature on assessment, especially the formative nature of assessment (see, e.g., Black and Wiliam, 1998), and an analysis of the expectations for classroom assessment practice outlined in the National Board standards for middle and high school science and mathematics teachers, we identified six dimensions of formative assessment (see figure 15.1). For each of these dimensions, we developed five-point descriptive rubrics. The rubrics were used to analyze the extent of use and the quality of formative assessment in participants' classroom practice at multiple points in time over the three years of the study.

The analyses of assessment rubric scores resulted in scores for each candidate on each of the six dimensions of formative assessment. Scores were reached through considering the evidence from all data sources using a preponderance of evidence approach rather than an additive model or averaging scores of discrete descriptors of practice. To establish inter-rater reliability, 66 percent of the first-year data packets, 41 percent of second-year data packets, and 41 percent of third-year data packets were scored independently by multiple raters. We used *t*-tests to compare mean scores of each group for each year. Because the group scores tend to mask the trajectories of change for individual teachers in both groups, we also analyzed how individual teachers showed evidence of change across the three years of the study. Details of the data analysis process and results of this study have been reported elsewhere (Sato, Wei, and Darling-Hammond, 2008).

Here, we report briefly the outcomes of the overall study and then turn our attention to a more detailed set of case analyses to explore the role that analytic reflection guided by professional teaching standards plays in changing teacher practice. As a group, the National Board candidates taught in schools with lower academic performance (as measured by state assessments), higher percentages of English language learners, and lower socioeconomic indicators than the teachers in the non-National Board group. Although the National Board group began the study with lower mean scores than the comparison group on all six dimensions of formative assessment, by the second year of the study, the National Board group had higher mean scores on all dimensions, with statistically significant gains on four of the dimensions ($p < 0.05$). They also continued to demonstrate

1. Views and uses of assessment
 - In the teacher's view, what counts as assessment?
 - How is assessment information used in this classroom (for student learning and for guiding instructional decisions)?
 - How is assessment viewed and used by the class?
2. Range, quality, and coherence of assessment methods
 - What is the variety of assessment methods the teacher uses for purposes of gathering information about student progress?
 - What is the quality of the assessment methods?
 - Are the assessment methods consistent with the learning goals?
 - Are the assessment methods strategically used to help further student learning?
3. Clarity and appropriateness of goals and expectations for learning
 - Are the learning goals and criteria of quality clearly articulated?
 - Are the learning goals conceptually important based on current thinking in the field?
 - Are the learning goals important and appropriate for the students (developmentally, readiness, interests)?
4. Opportunities for self-assessment
 - Are there opportunities for student self-assessment (e.g., reflecting on performance, monitoring progress over time, predicting future performance, determining what needs further improvement, reflecting on one's metacognition)?
 - How does the teacher scaffold or guide the student self-assessment?
 - What is the overall quality of these opportunities (e.g., relationship to learning goals, time allowed, consistency in opportunities, how information is used by students and teacher)?
5. Modifications to teaching based on assessment information
 - Does the teacher take into account prior knowledge of the students?
 - Does the teacher demonstrate flexibility and responsiveness to the students' needs and interests during instruction?
 - How is assessment information used to guide future instructional decisions?
6. Quality and appropriateness of feedback to students
 - How specific is the feedback to the task or assignment?
 - Does the feedback prompt students to take further action?
 - Is whole class feedback tailored to specific activities or students' needs?

Figure 15.1. Six dimensions of formative assessment.

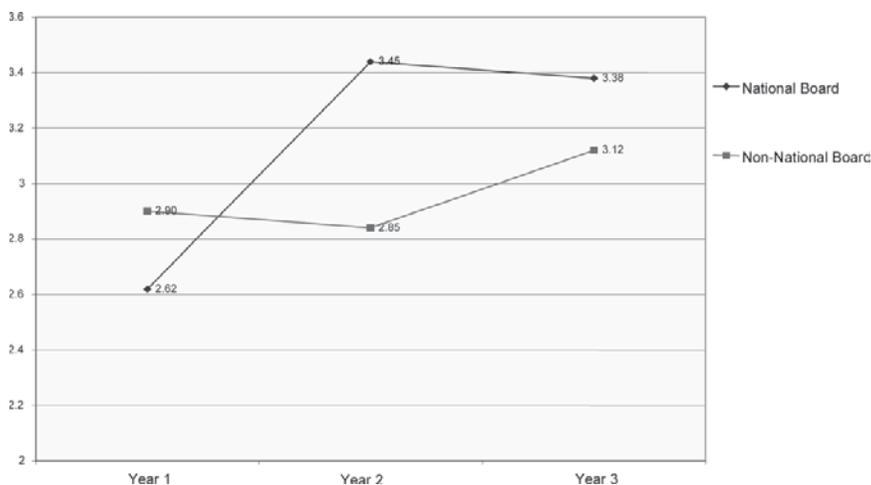


Figure 15.2. Average overall rubric group scores from year 1 to year 3.

substantially higher scores in the year after they engaged in the certification process (see figure 15.2).

The most pronounced changes in practice were in the variety of assessments candidates used and the ways in which they used assessment information to support student learning. Teachers who undertook the National Board Certification process attributed the changes in their practices to the National Board standards and the portfolio tasks. Teachers in the comparison group who showed noticeable changes in their practices described professional development experiences very similar to those supported by the National Board Certification process. Teachers' individual trajectories illustrated how access to professional development opportunities, especially for two in the non-National Board group, also made a difference in practice. We report some of the details of these experiences here through individual cases to highlight how the analytic and reflective strategies of the National Board Certification process and other similar professional development experiences contribute to change in practice.

CASE ANALYSES OF SELECTED TEACHERS

Six of the teachers in the study (three in the National Board group and three in the non-National Board group) were selected for in-depth analyses of

their teaching practice over time. Teachers were selected to explore a variety of change trajectories in more depth. All three National Board teachers selected showed strong or moderate evidence of growth in the assessment rubric scores from the first to the third year. Two of the non-National Board participants selected also demonstrated growth in their assessment rubric scores, while one did not show much evidence of change from the first to the third year. These six teachers participated in an additional face-to-face interview using a structured interview protocol that included an examination of the teachers' classroom data from the first year of the study. These interviews and all other study data were used to write the cases. A brief description of each case teacher (using pseudonyms) follows. Due to space constraints, only three abbreviated cases are presented, two National Board candidates and one non-National Board participant.

National Board Teachers

- Sam (case reported below) was a science teacher in an academically low-performing high school. Sam's rubric scores increased each year, starting with scores at the 2 and 3 level, increased each year and reached the 4 and 5 level in the third year.
- Marie (case reported below) was a science teacher in an academically high-performing middle school. Marie's rubric scores increased each year, starting with scores at the 2 level, and increased each year to scores at the 4 level.
- Isaac taught mathematics at a comprehensive high school with a moderate academic performance rating. Isaac's rubric scores began at the 1 and 2 level, increased slightly in the second year with more 2 and some 3 level scores, and increased more dramatically in the third year.

Non-National Board Teachers

- Helen (case reported below) taught science at a middle school with a moderate academic performance rating. Helen's scores remained at the 2 level for the first two years of the study. They improved slightly, but did not quite reach the 3 level, by the third year of the study.

- Iris taught mathematics at an academically high-performing middle school. Her rubric scores began in the mid 2 level and increased each year to the mid 3 level. Iris participated in a professional development program aimed at improving teachers’ assessment practice through student work analysis and professional learning communities.
- Louis taught science in a private high school. He began the study with strong scores at the upper 3 level. In the second year, his scores dropped while he also had the responsibilities of acting principal of his school. In the third year, no longer having principal duties, his scores recovered to almost the level where he began.

Sam: National Board Candidate with Strong Gains in Assessment Rubric Scores

Sam, who had been teaching for five years at the beginning of the study, was a 33-year-old white, male teacher. He was credentialed to teach secondary science and held a master’s degree in science education. His school had a long history of challenges and poor performance on standardized measures of achievement. During this study, the school academic performance index, as measured by state administered tests, was a 1 on a 10-point scale.

Sam’s assessment rubric scores (table 15.1) increased each year of the study, starting with scores at the 2 and 3 level in year 1 (Y1) and increasing each year, reaching the 4 and 5 level in year 3 (Y3).

Sam was strongly aware of the state content standards for science and deliberately referenced the standards in his classroom, teaching all three years of the study. Even with this explicit alignment of his curriculum to the content standards, Sam made a number of refinements to his teaching

Table15.1. Sam’s Assessment Rubric Scores for Year 1, Year 2, and Year 3

	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>
Views and Uses	3.13	3.75	4.88
Range, Quality, Coherence	3.00	4.50	4.50
Clarity and Appropriateness of Goals	3.38	4.13	4.00
Opportunities for Self-assessment	2.00	4.00	3.63
Modifications to Teaching	3.44	4.25	5.00
Quality and Appropriateness of Feedback	3.13	4.25	4.88

Rubric scale: 1–5

and assessment practices during this study. Through these changes, Sam began to use the learning goals he established for his students as a way to guide his feedback and his students' revision of work.

In the first year of the study, we saw Sam make attempts to connect learning goals and content standards to his students' learning needs. He consistently began lessons with activities designed to help him understand what his students already knew, but it was not evident how he then used that information about his students to make instructional decisions. Sam went through the motions of asking his students what they knew, but this information was not used formatively for instruction.

In the second year, lesson plans showed a change in the way Sam planned for assessing student progress toward learning goals. After introducing a new concept, he intentionally used open-ended discussion questions to ask students what they understood and what they felt they were still confused about. He also embedded "minute papers" in lessons, asking students to write briefly about the ideas from the lesson in their own words. He adopted "take-home quizzes" in which students were asked questions drawn from the day's lesson. On the student survey, in response to questions about how they know what the teacher wants them to learn, Sam's students reported that the "aims and purposes" of the lessons were made explicit, with a large increase from 11 to 60 percent of students reporting from the first to the second years. This level was maintained at 50 percent in the third year.

At the end of his second year, Sam indicated in an interview that he had begun to think about how he needed to focus on the "big idea" in his planning. In one of the third-year interviews, Sam discussed how he began the lesson sequence with activities designed to uncover what students had mastered and retained from middle school so that he could gauge what they already knew; only then did he begin to set goals for the class. In the third-year teaching videos, we observed Sam engaging in classroom conversations with his students, pushing them to elaborate on their thinking and connect it to other concepts, and to apply their understanding in concrete ways. Sam deliberately focused his assessments on how well students mastered the concepts he had identified as most important while at the same time eliminated activities and assessments that, in his words, "don't allow students to show the most important understanding."

Sam presented the same lesson sequence on phase changes two years apart in the classroom data he submitted. In the first year he stated that he reflected on the pacing of the lesson, the density of the material he had presented, and about what students really needed to know. In the third year, when he submitted the same lesson sequence, the lesson plan overview identified five specific assessments related to the learning goals compared to only one assessment—a quiz—in the first year. The quiz was meant to assess the students' beginning knowledge, yet he graded it and provided no indication that the information was used to guide instruction.

In the video from the third year, Sam asked questions and pushed students to defend their answers in ways that elicited student scientific thinking and revealed misconceptions during class discussion around a lab exercise and quiz. He then addressed students' ideas through questioning and discussion, repeatedly coming back to the students' comments and ideas. In the interview, he said that by gaining a better understanding of the knowledge his students already had, he was able to narrow the focus of his learning goals and pay better attention to how students build on their learning over time.

Across the three years of the study, Sam also expected students to revise their work. We observed his practices change over the three years, moving from his telling students that they had revision as an option for improving their work to a strategically scaffolded process of revision in which his students regularly participated. In the first year, student work samples contained invitations to the students to revise or seek help. Some work was accompanied by a rubric and a grade and with occasional detailed comments. However, it was not clear how students used these comments and rubrics to revise their work and Sam did not articulate how he supported students who wanted to revise their work. It was clear that Sam was providing feedback and an opportunity for students, but he did not help his students develop an understanding of the expectations for their work or a structured process and time to actually make the revisions.

By the third year of the study, feedback on student work samples was less focused on Sam telling the students what was wrong with their work and more focused on clear instruction about what needed to be done to make the work better. For example, Sam began to help his students understand work expectations by showing them examples of mastery from

former students and discussing why some work was scored a two on a rubric and other work a four.

In the final interview, Sam described a more elaborated set of revision guidelines he offered students that year. His guidelines specifically asked students to identify “what they have done, what they think they need to do, and how they will accomplish those things.” In addition, Sam changed the manner in which he gave feedback to students and built in opportunities for the students to act on the feedback as part of the assignment. In the open-ended student survey responses in the third year, students consistently cited the comments and the teacher’s encouragement “to revise so they could understand” as the kind of feedback they received from their teacher.

Sam acknowledged that his preservice teacher education had emphasized fairly traditional methods of assessment that included tests, quizzes, and worksheets and the purpose of assessment was mostly to establish defensible grades. He described his first year of participation in the study as being mostly focused on student grading, even though he had good intentions of working with individual students, allowing opportunities for revising work, and using rubrics and comments to assess student work.

During his final interview and without prompting, Sam cited his work as a National Board candidate as the major source of change in his teaching practice: “National Board made me really explain my thinking according to parameters laid down by the standards. It forced a direction in my thinking.” He attributed many changes in his practice to the National Board experience. “It definitely forced me to slow down,” he said, “and to look closely at whom I was teaching.” The portfolio entry in which he did an in-depth examination of two students and their work and progress over time has had long-lasting implications for his practice and he affirmed that he continues to do this now. He described a new attention to detail in his teaching, taking time to reflect about his practice—something he learned in preservice education but never really applied in practice. He also attributed his focus on identifying and assessing the big ideas and concepts in science to the National Board portfolio expectations.

Sam described his experience as part of a National Board support group as very important. Being with a cohort of people who had conversations about the same standards and ways of looking at their practice was important. He described the growth experience as just getting to a place where

things began to make sense and how he was able to learn from analyzing his own practice. He concluded the final interview by echoing what seems to be his approach to learning through revision in his own classroom: “The National Board process would work best if you could do the whole thing, fail all of it, and then do it all over.”

Sam also had access to other professional development opportunities. For example, he cited his work with the Japanese Lesson Study model two years prior to the study as the impetus for his wanting to know his students well and his working to develop a small community of learners. He adapted the minute paper activity from one of the workshops he attended during the summer of the second year of the project. Sam’s school focused on supporting students’ academic success by working in teams, staying with cohorts of students for two years, and focusing their collaborative work on learning about successful strategies with each student. He enjoyed the collaboration with peers and they used student advisory periods to learn about how each of them deals with different students, expanding their perspectives about students in different contexts and planning how to maximize the achievement of each student.

Marie: National Board Candidate with Strong Gains in Assessment Rubrics

Marie was 29 years old and had been teaching for five years at the beginning of the study. She taught middle school science (earth science, environmental science, and life sciences) to sixth graders in a high-performing middle school. Marie’s assessment rubric scores (table 15.2) increased during the study, starting with scores at the 1 and 2 level and ending in the 3 and 4 level.

Table 15.2. Marie’s Assessment Rubric Scores for Year 1, Year 2, and Year 3

	<i>Year 1</i>	<i>Year 2</i>	<i>Year 3</i>
Views and Uses	2.13	4.00	4.63
Range, Quality, Coherence	2.06	4.25	4.50
Clarity and Appropriateness of Goals	2.82	3.75	4.13
Opportunities for Self-assessment	1.25	2.50	3.25
Modifications to Teaching	2.63	4.50	4.25
Quality and Appropriateness of Feedback	2.63	4.25	3.31

Rubric scale: 1–5

Marie reported considerable autonomy in her curricular and pedagogical choices, with rare opportunities for collaboration with other teachers. Marie also reported that her curricular choices were strongly guided by state middle school science standards. She said that her pedagogical choices reflected a strong commitment to project- and inquiry-based instruction in which students work individually and in groups on projects and labs that they have had some role in designing.

In the first year of the study, Marie saw assessment primarily as an end-of-unit, summative evaluation of student work. For example, in discussing students' science notebooks (a year-long record of student work), Marie reflected that in the first year, they "would be just something that needed to be graded [at the end of the unit] so that I would have points to put into the grade book so that parents could see this is how they're doing in class." While some informal assessment practices were observed in her class discussions and in her interactions with small groups, the primary focus of these practices was classroom management. In reflecting upon her use of the notebook in the first year, Marie said that her purpose was mostly "to reward [the students] for doing the work or punish them for not doing the work . . . it was almost a discipline tool: 'You better do that or you're going to get a bad grade.'"

By the third year, Marie clearly included formative practices in her conception of assessment, often distinguishing between formative and summative aims when describing various classroom practices and assignments. For example, throughout her third-year interviews, student work was regularly described as a source of information about both her students as learners and the effectiveness of her own instruction, rather than solely a means of assigning grades. She reported in an interview, "It's a lot less about points now and it's more about helping them really get it." In classroom videos from the third year, Marie specifically probed for students' grasp of key concepts during class discussions, and students were much more active question posers than in videos of lessons from the first year. Marie reported,

If I see them writing something down and it's not quite what I want it to be I can intervene right there, or if I see a lot of kids kind of making that same mistake then decide, "Okay, the class needs to understand this concept more," so I can [adjust the original plan] and we can make sure that everybody understands that before we go on.

Classroom data also showed feedback to students was more ongoing and clearly focused on learning goals after the first year. In the second year student surveys, more than 80 percent of the students reported that the written feedback they received directed them toward what they needed to improve and none of the students identified the grade as a form of written feedback. Many students reported that they used rubrics for peer evaluation, suggesting that students had frequent opportunities to give each other feedback. For example, a student reported: “I would look at the other person’s paper, grade their work, tell them parts that they may need to work on, and tell them which parts are good.” Students made similar comments about how Marie provided guidance for improvement and offered suggestions for their work in oral feedback.

In multiple interviews, Marie credited her participation in the National Board Certification process with influencing her classroom practices. She pointed to both the in-depth discussion around the National Board standards for professional practice as well as the collegial critique of videos of lessons. She asserted that the lengthy discussions around professional standards gave her both a set of clear goals for her teaching and a practical sense of what those goals entailed:

We went in there and analyzed the heck out of those standards . . . from that point on . . . I started to realize . . . here are these standards for what a teacher should be up here, and I’d like to think of myself as a good teacher, but I realized . . . sometimes I’m kind of getting close and in some ways . . . I really am not reaching those standards . . . that was a big “ah hah” for me, to see all that laid out in black and white . . . [The process] made me *have* to reflect on how I compare to this ideal teacher.

Marie also found the National Board support group’s collegial critique of lesson videos influential. She cited the shared analysis and reflection on practice within this group as her first experience with structured collaborative learning, noting that the cohort included both peers and mentors. She said she gained considerable insight into her practice by listening to what others saw in her lessons, insight that may have been inaccessible without their “outsider” point of view:

[I was] good at giving constructive feedback about others’ tapes, and it always amazed me that I wasn’t that good at analyzing my own. But going

to that group, I was able to hear feedback from other people [in various stages of the NB process] . . . they helped me realize that there were certain things that even though I thought I was doing it, it wasn't really showing up on the videotape. And when you go through that process of having to explain to someone else what you're doing, you kind of realize that what you think you're doing doesn't always show and it made me realize that what my students are getting doesn't always match up with what I think I'm giving them.

In her final interview, Marie reported that the process of writing in the portfolio encouraged her to both focus on and scrutinize her professional goals:

In the process of writing and revising and cutting down, I really realized what were the things in my teaching that really mattered, and I don't think I had had that experience before . . . I've reflected and occasionally made notes on a lesson plan . . . but I don't think it was anything really systematic . . . it gave me . . . a reason to plan . . . before it was just, okay, I have to cover the content . . . now I realize there's so much more that I can do with the standards that we do have.

Helen: Non-National Board Participant with Modest Gains in Assessment Rubric Scores

Helen, age 61, had been teaching middle school life science for five years in a school district outside a major urban area with an academic performance index of 7 on a 10-point scale. She began her teaching career as a high school science teacher immediately after graduate school, then took a long hiatus from the classroom before returning. Helen's students were a heterogeneous mix of English learners, students with special education needs, and gifted and talented students. In interviews, Helen said that she had a lot of autonomy sequencing the content of her courses and that the norm in the school was to use the textbook as the curriculum. While Helen did not consult with other science teachers in her building, she mentioned that in the last two years, the department had been energized by two new science teachers. Helen planned to pursue National Board Certification soon after the study was completed.

Table 15.3. Helen's Assessment Rubric Scores for Year 1, Year 2, and Year 3

	Year 1	Year 2	Year 3
Views and Uses	2.06	2.13	2.63
Range, Quality, Coherence	2.19	2.06	2.69
Clarity and Appropriateness of Goals	2.06	2.38	3.00
Opportunities for Self-assessment	2.00	1.56	2.63
Modifications to Teaching	2.25	1.69	2.94
Quality and Appropriateness of Feedback	2.06	1.75	2.63

Rubric scale: 1–5

Across the three years of the study, Helen's assessment rubric scores (table 15.3) remained in the solid 2 level for the first two years of the study and improved slightly, but not quite reaching the 3 level, by the third year of the study.

In the unit overviews for her classroom data, Helen listed questioning, science notebook entries, and notebook checks as assessments. Although these assessment strategies are often associated with formative assessment purposes, Helen did not use these assessment opportunities in a formative way during the study. Based on her classroom data, interviews, and classroom videos across all three years of the study, Helen primarily used assessment opportunities to accumulate points that resulted in grades for the students.

Helen considered the science notebook to be review work, in other words, "assignments that don't require a lot of intellectual work such as copying textbook questions and writing the answers and copying diagrams." She said the notebook checks did not provide her with much information about student understanding. She thought about doing more "spot checks" of the notebooks to make sure students did the work because students sometimes did not do the homework and would complete it as they went over the answers in class. On the student survey, students reported that the written feedback on their work was primarily short, evaluative phrases (e.g., nice, beautiful, could be neater, good job) that focused on neatness and points earned.

When Helen used questioning in class discussions, the questions centered on students' recall of facts. She let them know whether they answered correctly by giving them participation points ("checks") and when students answered incorrectly, she called on another student for

the correct answer rather than probing thinking or understanding. Helen also indicated in interviews that the purpose of calling on students was to “keep the students on their toes” “when students are slacking off or checking out,” and as a way to give students extra credit participation points.

Other major features of Helen’s assessment practice were end-of-unit quizzes and completion of workbook pages or special projects for independent study students. Based on student survey responses, students scored each other’s quizzes and workbook pages by exchanging work and checking for correct answers. A central feature of Helen’s assessment practice was the “grade tracking sheet,” in which students kept a record of all their assignments and calculated their grades weekly. In interviews, Helen explained that the purpose of the science notebook and the “grade tracking sheet” was to “help students monitor their own progress so that they would take responsibility for their grades.” Overall, it appeared that Helen based her grading system on students’ work ethic and ability to follow directions and did not consider how her instructional or assessment decisions were related to their grades or their learning.

Helen was aware of particular weaknesses in her teaching yet felt confounded in her efforts to address them. In the first year she commented, “I’m always astounded by how much kids don’t get even when they look like they are listening and engaged. I need to figure out a better way to find this out.” At the end of the second year, she noted that from the results of a unit quiz, she could see that “whatever she is doing is not translating into demonstrated understanding on the part of the students” and she felt stumped by this problem. She discussed in the final interview that she intended to do more hands-on activities and to make science more fun yet still found herself doing a lot of lecturing. She also expressed a desire to reward students with a natural interest in science but who do not do well academically, but she did not know how to do this because she wanted students to “be responsible for earning their grades.”

When asked in the final interview whether she thought her teaching had changed during the course of the study, Helen expressed that she had not changed much. We noted small increases in her rubric scores on the dimensions *Views and Uses of Assessment*; *Range, Quality and Coherence of Assessment Methods*; and *Modifications to Teaching Based on*

Assessment Information primarily related to the use of informal monitoring strategies during instruction. It does not appear that Helen was implementing any new assessment strategies or modifying practices related to the notebook check and grade tracking. For example, during a unit on modern genetics in the third year, Helen noticed that many students did not understand how to interpret the results of crossing their “paper pets” because several students went to her at her desk and asked for help. She proposed that for next year she would spend more time modeling the genetic crosses.

It is unclear what may have influenced Helen’s practice that resulted in the modest increases measured on the three assessment rubrics in the third year. She reported participating in several professional development opportunities over the last few years. Just prior to joining this study, she attended a district workshop on gifted and talented education (GATE) issues and differentiating instruction. She then became the GATE coordinator at her school. This training prompted her to offer independent study options to her A students. Helen also reported taking a few classes at a local junior college on integrating technology into teaching, and subsequently she attempted a “Web Quest” assignment in the first year of the study.

Helen also took an inquiry-based science course at a well-known science center between the second and third year of the study. She reported that she had been doing more short science demonstrations in her class as a consequence of this professional development experience, although this was not seen in her third-year classroom data. Many of the hands-on demonstrations and student-centered activities that were encouraged by the science-center program focused on students’ conceptual understandings and teaching strategies that supported conceptual development. This may have encouraged Helen to more actively monitor her students during the learning activities.

CROSS-CASE DISCUSSION

In this cross-case discussion we characterize the changes in teachers’ assessment practice and discuss the influences on changes in practice.

Changing Classroom Assessment

Sam's attention to revision of student work and his increasing attention to providing structured opportunities for students to take responsibility for that revision indicated his willingness to use assessment as an opportunity for students to engage with ideas and skills until they reached a level of understanding that he *and the students* felt was satisfactory. Sam also developed a greater awareness of the learning goals and big ideas of science that he wanted his students to learn.

While he had already used the state academic standards as a guide for his instruction, we noted a stronger alignment of assessment and instruction, especially in the feedback Sam gave to his students during instruction, as he became more aware of his specific expectations of student work. Sam also became more deliberate in integrating assessment opportunities in his daily instruction. This was less a matter of incorporating new techniques into his practice than of becoming more attentive to students during class discussions and focusing his interactions with them toward specific learning goals. He also began structuring self-assessment opportunities that allowed the students to take a more active role in monitoring their own learning.

Similarly, Marie shifted her classroom practice to integrate assessment in the ongoing instruction in her classroom. This was demonstrated most dramatically in her questioning strategies in classroom discussions. She characterized her practice in the first year of the study as working under the "illusion that everybody is just floatin' right along and they're getting it." By the third year, she and her students took time to "hash it out together" because she was interested in getting at *how* the students understand an idea.

Marie also changed the way she used the students' ongoing science notebooks. Where they had once received cursory attention and were seen as a chore to grade, she began to see them as a source of information that she could draw upon on the spot to make instructional decisions. The notebooks became windows into student thinking that provided opportunities for immediate feedback and revision, thus supporting her students' developing conceptual understanding.

Helen's assessment practices focused on student work as a record of production for grading and reporting purposes. Even though she struggled

openly with important questions of how to help students better understand the course content and how to monitor their learning better, she had little in her repertoire to help her make the improvements she desired. She made some gains in modifying her instruction based on what she was observing in her students' learning, possibly as a result of her participation in professional development focused on science as inquiry.

Influences on Changing Assessment Practices

In the overall study, National Board candidates identified various aspects of the National Board Certification process that catalyzed change in their assessment practice. Teachers reported that the National Board teaching standards provided a set of clear goals for practice and a practical sense of what comprised those goals. The *assessment* standard defines assessment as a practice of collecting information from a variety of sources *and* using that information to inform instructional decisions. This conception of assessment helped National Board candidates change their working understanding of assessment. In Sam's case we saw the assessment standard guide how he specified learning goals and developed a feedback and revision process for his students. Similarly, Marie began to place more emphasis on everyday opportunities to assess and support students' understanding, focusing less on the grading and reporting functions of assessment.

Teachers also reported that the National Board portfolio entries required them to select lessons that would emphasize aspects of their practice such as assessment. This brought assessment practices into sharper focus for the teacher to analyze, helping them see how assessment operated in their classrooms. For Sam, the portfolio assessment provided a structure that prompted reflection on particular students' learning needs by asking him "to look closely at whom [he] was teaching." Marie found the analysis process helped her focus on instructional goals and prompted a shift from a "cover the content" approach to planning, to a deliberate and systematic process for planning and reflection around the learning goals.

Both Sam and Marie participated in a regional National Board candidate support group. They reported that the collegial critique of their lesson videos allowed them to hear other teachers' perspectives on their

teaching. The collegial video analysis also gave them windows into other teachers' classrooms and thinking. Seeing other possibilities of practice prompted some teachers to adopt new practices and cease some practices that were not meeting their students' learning needs.

In contrast, Helen expressed a desire to understand what was happening in her practice when students did not perform as she expected. She also raised several questions about how she was engaging with her students during instruction. However, Helen did not have a vision of the possible in classroom teaching like the one described through teaching standards. She also had no tools or process for systematically reflecting on her teaching. She could adopt new practices, but the overall development of her teaching was not affected by these additions.

DEVELOPING REFLECTIVE PRACTICE THROUGH THE NATIONAL BOARD STANDARDS AND CERTIFICATION PROCESS

National Board candidates typically spend the initial phase of candidacy studying the teaching standards to gain an understanding of the expectations for the National Board assessment. The changes in practice measured in this study along with teacher interviews suggests that candidates' understanding and practice of the teaching standards develop as they work through the portfolio assessment tasks to show evidence of the standards in their teaching.

The professional teaching standards provided both a description of accomplished teaching as well as a framework for critically analyzing one's own and others' teaching practice (Chittenden and Jones, 1997; Sato, 2000). For Sam and Marie, the teaching standards presented a vision of practice that they did not have prior to their engagement with the certification process. The teaching standards became an important driver of change in practice for them. Helen wanted to develop her practice but had only a vague image of what she wanted to do. Without the guidance in creating an image of practice in the ideal sense, Helen seemed stalled in her development as a science teacher.

Combining the teaching standards with the certification process created a scaffold for the National Board teachers to analyze and reflect on prac-

tice. For example, the two areas of greatest growth in assessment practice in the National Board group were *Views and Uses of Assessment* and *Range, Quality, and Coherence of Assessment Methods*. These dimensions of assessment are core features of practice described in the *assessment* teaching standard. Portfolio questions for all four of the certificate areas in this study included questions that prompted candidates to describe, analyze, and reflect specifically on these dimensions of assessment practice. For example, one written commentary prompt asked, “What is the role of assessment within your teaching? What is the relationship between your approach to assessment and the learning goals you set for your students? Why is this approach appropriate for your students?” In responding to these questions, candidates must present evidence from their practice that shows how practice aligns with the expectations of the teaching standards.

The National Board Certification process offers teachers an opportunity to reflect systematically on their teaching practice through the lens of a rigorous set of teaching standards established and vetted by the professional community of teachers. In the cases presented, we saw that teachers did not see these standards as a threat to their autonomy or professionalism, but that they valued the opportunity to gain a deep knowledge of these standards, discuss them with other teachers, and work toward achieving those standards in their own practice.

In the process of engaging with colleagues to examine each other’s videos, unit plans, and student work samples through the lens of the National Board standards, teachers incorporated the standards into their thinking and teaching practice and ultimately improved their assessment practices. These findings have important implications for how teaching standards like those of the National Board can be harnessed to improve the quality and effectiveness of professional development efforts—by linking professional standards valued by teachers to systematic analysis and reflection of their own day-to-day teaching practice through a study of teaching artifacts.

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**TEACHER REFLECTIVITY AND
INTERNATIONAL PERSPECTIVES**

Lesson-Based Discussion and Learning to Teach

Chinese Teachers' Talk about Novice Teachers' Lessons in Teaching Research Groups

Jian Wang and Lynn Paine

ABSTRACT

U.S. literature assumed that teachers' lesson-based discussion is crucial for developing their professional knowledge, while contrived curriculum and teacher collaboration are detrimental to such discussion. However, few studies have examined the focus and forms of teachers' lesson-based discussions under contrived curriculum and teaching contexts. By analyzing the lessons taught by three Chinese novice teachers and their colleagues' post-lesson discussions, this study found that the three lesson-based discussions shared similar foci on teaching, subject content, and student learning and their interrelationship and offered balanced critiques, compliments, and suggestions for novice teachers' instruction, which were supported with reasons and examples. These findings challenge the assumed impact of the contrived curriculum system and teaching organization on teachers' knowledge development.

Teachers' lesson-based discussions are assumed crucial for teachers to develop deeper understanding of subject knowledge and its effective representation (Hiebert, Gallimore, and Stigler, 2002; Hiebert and Stigler, 2000). An administratively imposed curriculum and teaching organization, a contrived system, is seen problematic for creating and sustaining a collaborative relationship among teachers and, thus, prevents the positive influence of teachers' lesson-based discussions on their professional knowledge development (Cochran-Smith, 2005; Hargreaves and Dawe, 1990).

A careful examination about the opportunities that teachers' lesson-based discussions offer novice teachers to develop professional knowledge under a contrived curriculum system and teaching organization will help verify these theoretical assumptions. It will also offer useful implications for countries such as the United States and England that are reforming teaching by establishing curriculum standards and advocating teacher collaboration (Darling-Hammond and Ball, 1998; Hargreaves, 1994) and that are improving teaching by decentralizing the curriculum system such as in countries like China (DeLany, Wang, and Paine, 2001).

Drawing on lessons from three Chinese novice teachers and their colleagues' discussions of these lessons, this study analyzes the focus and forms of these discussions and their influences on novices' professional knowledge development. As a result, it explores the relationship between teachers' talk and the contrived contexts of curriculum and teaching organization.

TEACHERS' PROFESSIONAL KNOWLEDGE AND LESSON-BASED DISCUSSION

Teachers' deeper understanding and flexible representation of subject content to various groups of students is a central component of their professional knowledge (Darling-Hammond and Bransford, 2005). Such knowledge is event structured, context based, and practical in its nature (Carter, 1990) and interrelated with teachers' personal experience (Clandinin and Connelly, 1995).

To develop such knowledge, novice teachers need to reason about subject content in relation to pedagogy (Ball and Bass, 2001), argue alternatives to teaching (Kennedy, 1991), and apply their thoughts to uncertain instructional contexts (Floden et al., 1990). They need to develop such knowledge in the contexts of its use (Feiman-Nemser and Remillard, 1996) through constant reflection about their instruction (Schön, 1987; Sykes and Bird, 1992) in public guided by a shared norm of good teaching (Hiebert, Gallimore, and Stigler, 2002; Wideen, Mayer-Smith, and Moon, 1998).

Teachers' lesson-based discussions on novices' instruction match nicely these assumptions of teacher learning and a social-cultural per-

spective of learning (Putnam and Borko, 2000). They offer novices an opportunity to develop their professional knowledge that is situated in and grows out of the context of its use (Brown, Collins, and Duguid, 1989). They allow novices to elaborate and justify their practice and internalize the ideas of teaching that novices do not possess in the first place in the professional community (Vygotsky, 1994). In addition, they provide chances for experienced teachers to assist novices learning to teach to the level beyond what they can accomplish on their own (Tharp and Gallimore, 1988; Vygotsky, 1978).

Studies in East Asian countries are often used to support these assumptions. Japanese teachers are able to focus on student conceptual understanding of mathematics and science and help students use such an understanding for problem solving (Tharp and Gallimore, 1988; Vygotsky, 1978). Lesson study groups among Japanese teachers presumably support their instruction by organizing them to plan, observe, and reflect on each other's instruction (Fernandez and Yoshida, 2004; Lewis, 2000).

Chinese teachers are able to develop more sophisticated understandings and flexible representations of mathematics for their instruction (Ma, 1999; Zhou, Peverly, and Xin, 2006). A subject-based teaching organization prevalent in Chinese schools, Teaching Research Group, is assumed to contribute to their knowledge through organizing them to plan, observe, and reflect on their instruction (Paine, 2001; Paine, Fang, and Wilson, 2003; Wang and Paine, 2003). However, these studies of Japanese and Chinese teachers often fail to analyze what and how teachers talk about each other's lesson. Therefore, it is problematic to assume that teachers' lesson-based discussions lead them to better knowledge and effective teaching when the content and forms of these discussions are not clearly delineated.

Studies in North America further complicate the assumed role of lesson-based discussions in developing teachers' professional knowledge. Teachers' discussions that support critical examination of teaching are relatively rare in North America (Borko, 2004). They are often unable to articulate their thoughts behind their instruction with their colleagues (Carter, 1990; Franke et al., 2005). Even when organized to do lesson study like their Japanese counterparts, teachers struggle to focus on content and its representation (Fernandez and Chokshi, 2002; Parks, 2008).

Some scholars assume that the absence of curriculum standards (Ball and Cohen, 1999) and the individualized teaching organization prevents

teachers from depending on each other in improving their teaching (Feiman-Nemser and Floden, 1986; Little, 1990). However, other scholars (Cochran-Smith, 2005; Giles and Hargreaves, 2006; Hargreaves and Dawe, 1990) argue that any contrived teachers' relationships and curriculum are problematic for an authentic relationship among teachers, under which teachers' lesson-based discussion can be less useful in helping developing their professional knowledge.

While both arguments indicate that teaching and lesson-based discussions alike can be culturally scripted by the broader contexts of school curriculum and teaching organization (Hiebert, Gallimore, and Stigler, 2002; Stigler and Hiebert, 1999), they assume differently the influences of contrived curriculum and teaching organization on the development of teachers' knowledge. Thus, it is necessary to explore the focus and form of teachers' lesson-based discussions in the contrived curriculum and teaching organization.

PARTICIPANTS, DATA, AND ANALYSIS

Participants and Contexts

Participants of this study included three first-year teachers, Ms. Tian, Mr. Li, Ms. Zhen (pseudonyms), and their colleagues. They were chosen for this study for three reasons. First, like most Chinese teachers, they teach under the contrived curriculum system, which means that their teaching followed the National Teaching and Learning Framework that specifies teaching standards, requirements, and schedule for each subject and grade level, relies mainly on the textbook and teachers' manuals aligned with the national framework as their teaching materials, and are assessed twice a semester by curriculum-based examinations at the district level (Paine, 2001; Wang and Paine, 2003). This system reflects the major features of centralized curriculum authoritatively, specifically, and consistently implemented (Cohen and Spillane, 1992).

Second, like most Chinese teachers, they work in subject-based teaching research groups in their schools. These groups organize teachers to plan, observe, and reflect collectively on each other's lessons and to

discuss teaching and examination on a regular schedule using the national curriculum framework as a guide (Paine, Fang, and Wilson, 2003). This system is organized nationally as a mandated system and operates as suggested in the literature for helping teachers develop professional knowledge through their interdependence in reflecting, exploring, and improving teaching (Little, 1987; Putnam and Borko, 2000).

Third, they teach different subject areas at different grade levels in two different schools. Ms. Tian teaches Chinese language arts to sophomores and Mr. Li teaches physics to juniors in the same normal school, which draws students from junior secondary schools based on the provincial level junior secondary school graduation examination and in which students study both general secondary courses like those offered in high school and teacher education courses in order to be elementary teachers. Ms. Zhen is a sixth grade mathematics teacher in a regular secondary school. These differences help us understand the range of novices' lessons and lesson-based discussions under the contrived curriculum and teaching organization.

Data Sources, Coding, and Analysis

The data for this study include three 45-minute public lessons each taught by a novice teacher and observed by his or her colleagues in the teaching research group and three 35-minute discussions of each lesson in which the novice and his or her colleagues were the participants. Each lesson was videotaped, transcribed, translated, and coded for the activity chunks in the natural order and each chunk was described to provide the background information about the lesson. Each lesson-based discussion was audio-taped, transcribed, translated, and coded for emergent topics (Strauss and Corbin, 1990), which were then classified into four categories. First, each topic was classified according to the order and how many times participants initiated the topic for the patterns of their involvement in the discussions (Strong and Baron, 2004).

Second, each topic was classified for its focus on: (1) teaching, (2) subject content, (3) students, and (4) other. If a particular topic had more than one of the above foci, it was coded as multifocused topics. This analysis helped us understand the focus of discussion and the extent to which it

addressed the relationship between teaching, subject content, and students, a crucial component of teachers' professional knowledge (Darling-Hammond and Bransford, 2005; Shulman, 1987).

Third, each topic was coded again using nine subcategories of illocutionary speech acts (Austin, 1962): (1) compliment, (2) critique, (3) suggest, (4) question, (5) explain, (6) agree, (7) defend, (8) self-critique, and (9) others. The frequency of these speech acts in each discussion informed us about the dynamics and forms of the discussion.

Finally, each topic was also coded according to whether it was (1) unelaborated, (2) example-based, (3) reason-based, or (4) reason- and example-based. The frequency of these allowed us to see the degree of each discussion's specificity (Carter, 1990) and reasonableness (Little, 1987; Zeichner and Liston, 1987).

We compared the results from the above coding and classification processes across the three cases to identify similarities and differences. Based on this analysis, we then explored the learning opportunities that these novice teachers had in these discussions. In the end, the characteristics of these discussions were also analyzed in light of the relevant literature.

This study did have several limitations. First, we did not interview novices about their lessons and observe their subsequent lessons after the discussion. Therefore, we are unable to address the actual consequences of lesson-based discussion on novices' instruction. Second, it did not analyze the discussions on novices' lessons before their lesson that may have different focuses and forms. Finally, only one public lesson from each novice was analyzed that cannot represent different kinds of novices' lessons.

MS. TIAN'S CASE

The Lesson: How to Read a Memoir

Ms. Tian taught a memoir of a Chinese writer, Zhu Zhiqing. Five of her colleagues in her school's Chinese language arts teaching research group observed the lesson. Ms. Tian started the lesson with a quotation by Mr. Zhu and information on his background and asked students to read silently the first paragraph of the memoir while listening to its recording. She then asked two students to explain two phrases in the paragraph. After they

gave the literal meanings of the phrases, she explained that the two phases had different meanings in the paragraph.

Ms. Tian read the second paragraph and explained that the word *pa* meant “maybe” in the paragraph. A student interpreted the word as literally “afraid,” but the teacher insisted on her interpretation and asked the student to discuss this with her after class. She divided the class into four groups to discuss the personalities of Mr. Zhu based on the paragraph and had each group report their findings. She then summarized that the paragraph showed Mr. Zhu always wanted to learn, had a passion for truth, liked to ask questions, and always listened to others’ ideas in a fair manner, and it presented the qualities of Mr. Zhu with examples from his daily life and academic behaviors as support. She told the class a story about Mr. Zhu to enhance her summary.

Finally, Ms. Tian told the class that the writing technique of integration of descriptions and comments was used in the two paragraphs. She asked a student to find an example of this technique in the text and finished the lesson by assigning the class to read the rest of the memoir and find another memoir to read in the newspaper.

The Lesson-Based Discussion

The analysis of the five colleagues’ discussion on Ms. Tian’s lesson resulted in several findings. First, most of the topics in the discussion focused on teaching, subject content, or students. As figure 16.1 shows, 36 percent of the total topics were related to teaching, 27 percent to subject content, and 21 percent to students. Together they represented 84 percent of the total topics.

Second, as indicated in figure 16.2, most topics in this discussion (59 percent of the total) were multifocus topics. Among them, 36 percent related to teaching, subject content, and students with each other and 15 percent connected teaching and children.

Here is an example of how Participant 1 linked teaching, subject content, and students when helping Ms. Tian deal with students’ misunderstanding of the word *pa* in the discussion:

If focusing on the sentence structure, you will see this word played a role of connecting the present situation to the situation that follows. Then it is not

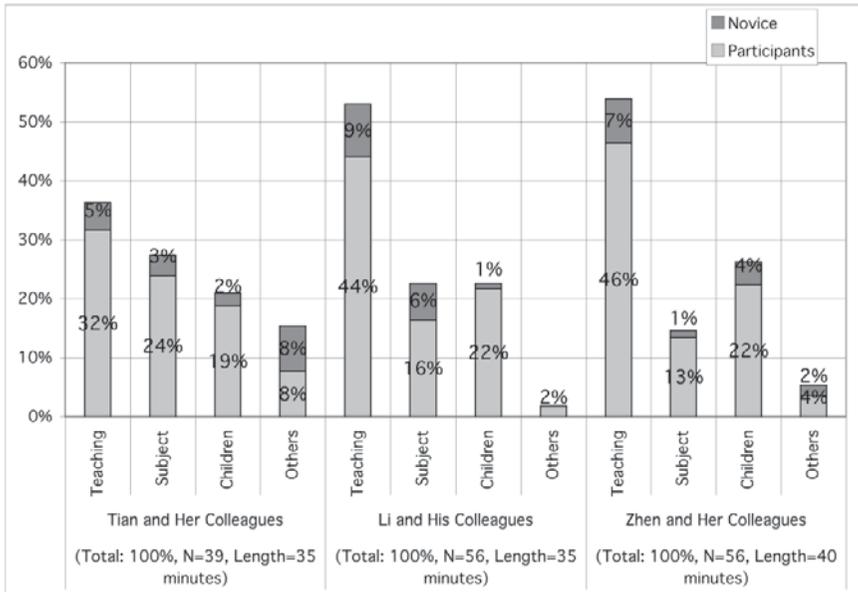


Figure 16.1. Focus of discussion in each case.

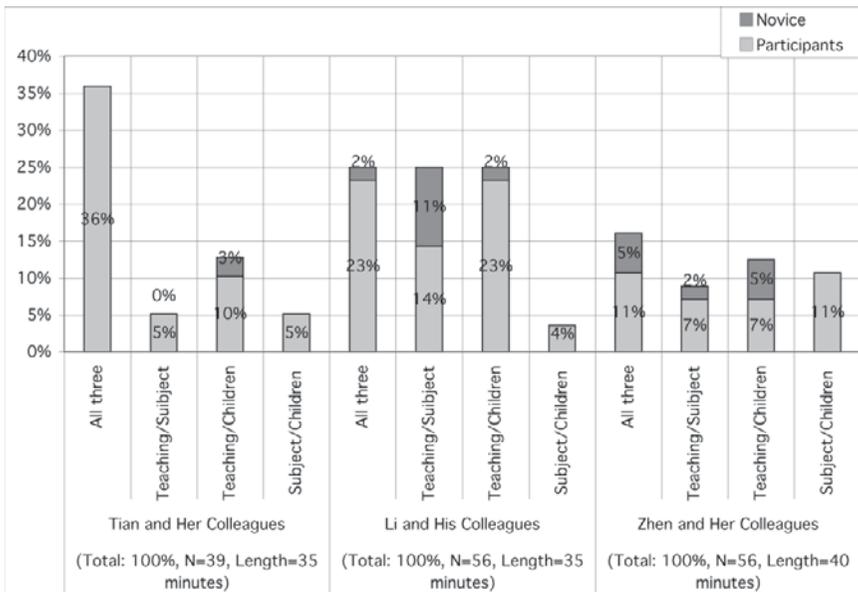


Figure 16.2. Multifocused topics in each case.

difficult for students to understand the word since they have finished middle school. You have to point out that the meaning of “*pa*” (maybe) was related to the two words that followed, “*zhi you*” (only). This is an important point of the text. You should be careful about where the important points are in your teaching. It is very hard to teach someone his or her native language. However, you need to help them understand those ambiguous places. Secondly, you only focused on “*pa*” in your teaching. However, I suggest you to focus on “*zhi you*” first and then teach “*pa*” because “*zhi you*” suggested the author’s passion for Mr. Zhu. However, he was not sure if there were other writers like Mr. Zhu and that is why the word, “*pa*,” was used here because the author had to be accurate in his writing.

In this comment, Participant 1 explained the meanings of the word *pa* as it related to the words *zhi you* and their functions in the paragraph, commented on how students would understand the paragraph by focusing these words, and proposed a different way to teach this paragraph.

Third, most topics in the discussion were initiated by Participants 1, 3, and Ms. Tian as suggested in figure 16.3, who developed 38 percent, 21 percent, and 18 percent of the topics, respectively. The other teachers each

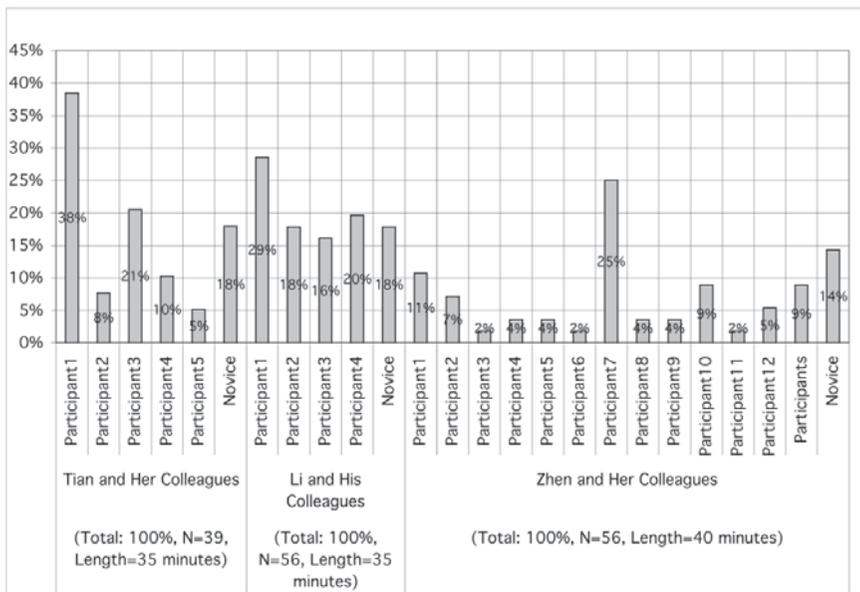


Figure 16.3. Topic distribution in each case.

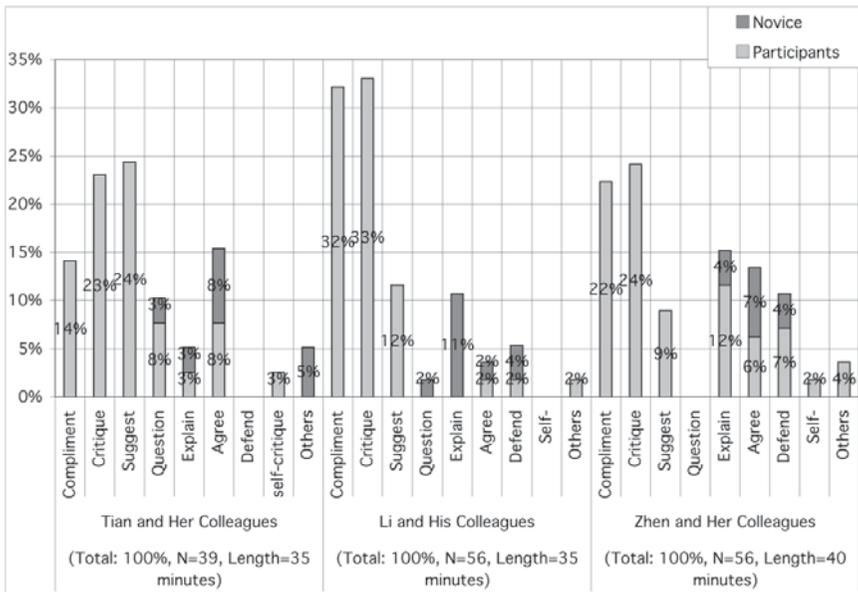


Figure 16.4. Distribution of speech act topics in each case.

initiated fewer than 10 percent of the topics. Although six teachers were involved in this debriefing, only three teachers, including Ms. Tian, were active participants.

Fourth, based on figure 16.4, participants’ critiques and suggestions were the most frequent kind of speech act in the discussion, taking 23 percent and 24 percent of the total topics, respectively. The second most frequent speech acts were compliments (14 percent) and agreements (15 percent) with what others said.

Fifth, more than half of the topics were supported either with both reasons and examples (36 percent) or with examples (21 percent) as shown in figure 16.5.

MR. LI’S CASE

The Lesson: Light Refraction

Mr. Li taught light refraction and was observed by four of his colleagues in the school’s physics teaching research group. After reviewing light re-

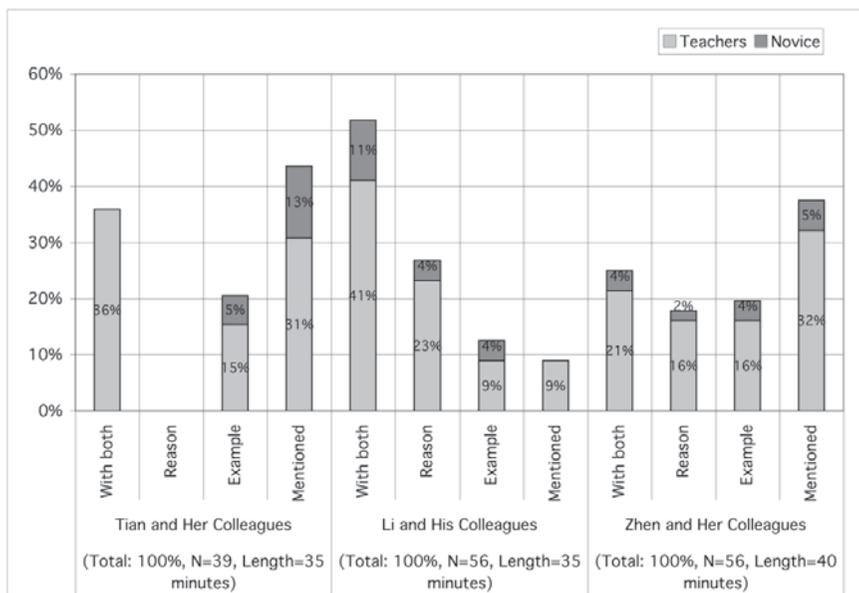


Figure 16.5. Topic presentation in each case.

flexion, he started the lesson on by using a laser light measurement tool to show that when light entered a glass brick, it changed direction. He defined this phenomenon as light refraction. Mr. Li then asked the class to observe the relationship between entering light and refraction light. As he changed the angle of entering light with the tool, students reported the extent to which the light changed direction after entering the brick. He guided the class to calculate a constant ratio between reflection light (entering light) and refraction light (light after entering the brick).

Then Mr. Li showed the class a table with the constant ratios for eight materials and defined the materials with bigger ratio as “light-condensed” media and that with smaller ratio as “light-spared” media. He compared the constant ratio for oil with that for alcohol and then the ratio of alcohol with that of water to suggest that these concepts were relative. Mr. Li asked the class to predict what would happen as the light went from oil into alcohol and a student proposed that when light entered the “light-spared” media from the “light-condensed” media, the entering angle would be bigger or vice versa.

Mr. Li then divided the class into pairs and gave each an iron bowl with a magnet in it and a small bucket of water. He asked each pair to explain

what happened when one of them stood in a place where the magnet in the bowl could be barely seen while the other put the water into the bowl. Some students reported that they could see the magnet as water was pulled into the bowl because when light entered water from air, its angle changed. He gave each pair a glass brick and a pencil and asked them to explain what happened when the pencil was placed behind the glass brick with half of it above the brick. Students reported that the pencil was broken in the middle because the light reflecting the part of pencil behind brick traveled through two different materials and refracted twice while the light reflecting the other part of pencil only traveled through one medium and refracted once. Mr. Li summed up the lesson and assigned homework.

The Lesson-Based Discussion

The four teachers who observed Mr. Li's lesson discussed it with him afterward. Our analysis of this discussion suggested a few findings. First, as shown in figure 16.1, a majority of topics in the discussion (53 percent) focused on teaching. The topics of subject content and of students each constituted 23 percent of the total. Only 2 percent of the topics were devoted to other issues.

Second, about 79 percent of the total topics in the discussion were multifocused topics, with 25 percent relating teaching, subject content, and students to each other, 25 percent connecting teaching and subject content, and 24 percent linking teaching and students, as shown in figure 16.2. Consider how Participant 3 related teaching and subject matter with students' understanding when commenting on Mr. Li's use of questions about the relativity of "light-spared" and "condensed" materials:

Your questions were too simple considering you wanted to push students to think about difficult problems in the lesson. For example, you asked students what the material was called when the ratio of its reflection-refraction was small. They just read the answer from the text. . . . When teaching this concept, you should use three examples: water, glass, and air. You may ask them, "Is glass light-spared material or light-condensed materials?" To answer this question, they have to compare glass with water, and it is condensed material. However, it is a "light-spared" material when com-

pared with air. In this way, they will be able to understand the concept by themselves.

In this comment, Participant 3 explained why Mr. Li's question was too simple to push students to discover the relativity of "light-condensed" and "light-spared" media. She proposed an alternative question with three kinds of materials to help students understand the concept.

Third, each participant had substantial involvement in the discussion. As shown in figure 16.3, each participant developed 16 percent to 29 percent of the total topics with Participant 1 (29 percent) as most involved in the discussion.

Fourth, as figure 16.4 illustrates, the most frequent topic in the discussion was participants' critiques (33 percent of the total topics). Their compliments were second (32 percent). The next was their suggestions (12 percent), Mr. Li explaining his thoughts (11 percent), and showing his agreement or disagreement with what was said (6 percent).

Fifth, most topics in the discussion (52 percent) were supported with both reason and example. Many topics were supported with reasons (27 percent) or with examples only (13 percent). Together 90 percent of the topics were supported with reason, example, or both.

MS. ZHEN'S CASE

The Lesson: Multiplication of Fractions

Ms. Zhen taught multiplication of fractions and was observed by 12 teachers in the school mathematics teaching research group and personnel from the school district. First, Ms. Zhen called on a student to draw on the blackboard a rectangle $\frac{4}{5}$ meter long and $\frac{2}{3}$ meter wide in a square with 1-meter sides. The student divided the square into 15 even segments by drawing 4 vertical and 2 horizontal lines and shaded the rectangle. Ms. Zhen then asked a boy to calculate the area of the rectangle. The boy told the class that the area was $\frac{8}{15}$ since the square was divided into 15 pieces and the rectangle covered 8 pieces.

Then Ms. Zhen showed a rectangle of the same size without the square as background and asked the class to calculate its area. A girl proposed to

use the theorem, $\text{Area} = \text{Length} \times \text{Width}$, that was $4/5 \times 2/3 = 8/15$. Ms. Zhen asked the class to infer the theorem of multiplication of fractions based on the girl's example. A student proposed the theorem as a denominator times a denominator as the denominator and a numerator times a numerator as the numerator and in this case, $5 \times 3 = 15$ as the denominator and $4 \times 2 = 8$ as the numerator.

Next, Ms. Zhen divided the class into groups to find an alternative proof. A student proposed that $4/5 \times 2/3$ could be changed to $4/5 \times 2 \sqrt{3}$ and then to $8/5 \sqrt{3}$, following the rule for a fraction multiplying a whole number. He then used the rule for a fraction divided by a whole number to calculate $8/5 \sqrt{3}$ to get $8/15$. Ms. Zhen summarized the two approaches and then asked three students to calculate $5/6 \times 5/7$ on the blackboard and checked their answers with the class step by step. Two students solved the problem using the first approach and the third student used the second method. The class agreed the first method was more efficient. Ms. Zhen had three more students calculate $5/8 \times 3/9$. This time, the first student did it correctly by finding the lowest term for $3/9$ and then used the first method. The second student used the first method but made a calculation mistake. The third student followed the first approach without simplifying $3/9$ to the lowest term. Ms. Zhen had the class do two more problems and this time they were all right following the first theorem.

Ms. Zhen then asked the class to calculate $7 \times 5/21 = \underline{\hspace{2cm}}$. A girl solved the problem by changing 7 into $7/1$ and then did the calculation by following the first theorem they had just developed. A boy changed $7 \times 5/21$ into $5/21 \times 7$ based on the exchange property of multiplication and then got the result by following the rule for a fraction times a whole number.

Finally, Ms. Zhen divided the class into two groups and asked a member from each group to compete against the other group by calculating problems involving the multiplication of fractions on flash cards. Then they were asked to choose a paper peach with the matching answer for each flash card from a paper tree. Ms. Zhen concluded the lesson by assigning homework.

The Lesson-Based Discussion

All 12 observers of Ms. Zhen's lesson participated in the discussion. The analysis of this discussion revealed the following: First, the first three

most common topics were teaching, students, and subject matter. As shown in figure 16.1, 54 percent was on teaching, 26 percent on student, and 15 percent on subject matter.

Second, most topics (89 percent) were multifocused. Among them, 6 percent connected teaching, subject content, and students to each other, 13 percent related teaching and students, 11 percent connected to both student and subject, and 9 percent to teaching and subject matter, as shown in figure 16.2.

Third, in the discussion, as suggested in figure 16.3, Participant 7 developed the most topics (25 percent) while Ms. Zhen initiated 14 percent of the topics, the second most. The other participants developed 2–10 percent of the total topics. This data showed that only Participant 3 and Ms. Zhen were actively involved in the discussion.

Fourth, the most frequent topic was observers' critiques (24 percent) and compliments (22 percent) of Ms. Zhen's teaching. Suggestion, agreement, or disagreement took 9 percent, 8 percent, and 7 percent of the total topics respectively. The following dialogue shows how some participants critiqued and complimented the lesson while other participants agreed and disagreed with what was said:

Participant 1: I observed both lessons. (Ms. Zhen taught this lesson to another class before which was also observed by many teachers in the school mathematics teaching research group). I think this public lesson is much better than the trial lesson. As a new teacher, she showed a clear teaching process. Concepts were clearly taught and students were active. In general, it was very successful lesson for a first-year teacher. Students were active and they were able to calculate correctly in the game, "picking peach." The result is good.

Participant 2: I also observed both lessons. I think she did a good job in connecting theory to practice in this lesson. However, I think in her trial lesson, she was able to have every student practice in the card game. In today's lesson, she was not able to do it.

Participant 3: Except for little bit of nerves at the start, she taught much better than the first lesson.

Participant 4: I think students in the first class were much better in mathematics than those in the second class.

In this dialogue, a clear difference existed among the participants in relation to the two lessons that Ms. Zhen taught and they observed. While Participants 1 and 3 pointed out several specific strengths in the second lesson, Participants 2 and 4 drew attention to the weakness of the second lesson compared with her first.

Fifth, most topics in the discussion were presented with both reason and example or either reasons or examples as support. As figure 16.5 shows, the topics with both reason and examples took 25 percent, those with reasons only were 18 percent, and those with examples were 20 percent. Here is how Participant 7 complimented Ms. Zhen's approach to helping students understand fraction multiplication with both reasons and example:

The theorem for multiplication of fractions was that a numerator times a numerator with its result as the numerator and a denominator times a denominator with its result as the denominator. Although students know how to calculate this, they may not necessarily develop their ability to understand why here. They always expect you to give them answers. I think it is good that Ms. Zhen taught the idea by having students guess the results. Since they already knew how to calculate the area, they can use the ideas to discover the result of fraction multiplication and that was $8/15$.

Here, Participant 7 argued that Ms. Zhen's representation not only addressed what the calculation of the area of a rectangle that students had already learned but also pushed students to understand the reasons behind multiplication of fractions that students often failed to learn.

CROSS-CASE COMPARISON

The three lesson-based discussions were more similar than different. These similarities and differences were as follows. First, each discussion focused most frequently on teaching, subject matter, and students (85–98 percent). The differences between the three cases were: The discussion of Ms. Tian's lesson had more topics (15 percent) unrelated to teaching, subject, or students than those in the other two cases (less than 5 percent). The discussions of the lessons of Ms. Tian and Mr. Li paid more attention to subject content (27 percent and 23 percent) than the discussion of Ms. Zhen's lesson, which focused more on students (26 percent).

Second, most topics (48–79 percent) in each case were multifocused topics including 36 percent, 25 percent, and 16 percent of topics respectively in three cases that connected teaching, subject content, and students. The differences were that in the discussion on Mr Li's lesson, more topics focused on the connection between teaching and subject (25 percent), while the discussion on Ms. Zhen's lesson stressed more on the relationship between subject matter and students (11 percent).

Third, the speech act topics developed in all three cases were similar in that the critiques, compliments, and suggestions were the most frequent topics, which together took 41 percent, 77 percent, and 55 percent of the total topics respectively in the cases of Ms. Tian, Mr. Li, and Ms. Zhen. Their differences were that in Ms. Tian's case, more attention was paid to critiques and suggestions, while in the cases of Mr. Li and Ms. Zhen, more attention was paid to critiques and compliments.

Fourth, in each discussion most topics were supported with reasons, examples, or both, which together took 57 percent (Ms. Tian), 91 percent (Mr. Li), and 63 percent (Ms. Zhen) of the total topics in the discussions. The topics supported with both reasons and examples were the major category of topics in each case, although there were no topics presented with reasons alone in the Ms. Tian's case and fewer unelaborated topics in Mr. Li's case.

Fifth, all three novice teachers had substantial input in the discussions about their lessons, initiating about 14 percent to 18 percent of the total topics in each case. When novice teachers participated in the discussion, they mainly explained what they did, agreed, and disagreed with what was said. The differences between the three cases were that Mr. Li did more explanation, Ms. Tian and Ms. Zhen showed more agreement, and Mr. Li and Ms. Zhen had more disagreements with what was said.

DISCUSSION AND CONCLUSION

Lesson-based discussion among teachers is presumably important for teachers to develop a deeper understanding and a more flexible representation of subject matter to their students in their instruction (Ball and Bass, 2001; Hiebert, Gallimore, and Stigler, 2002). Our analysis reinforces this assumption with observational data. In spite of their differences, each case

in our study paid substantial attention to subject content and its connections to teaching and students and, thus, the discussions offered the novices the opportunities to develop subject understanding and to learn about its effective representation to students. Such a finding seems consistent with the findings of the interview study with Chinese teachers (Ma, 1999) in which Chinese elementary teachers attributed their understanding of mathematics content to their lesson-based discussions in their teaching research groups. However, it is interesting to note that such features of lesson-based discussions were often absent in similar discussions among U.S. teachers when they were required to have such discussions on their colleagues' lessons (Fernandez and Chokshi, 2002). What makes such a difference is a question worth further research.

It is also theorized that teachers need to pose questions for teaching situations, critique each others' practice, and develop useful ideas to solve various teaching problems in order to teach well (Cochran-Smith, 1991; Cochran-Smith and Lytle, 1999; Feiman-Nemser and Featherstone, 1992). This study suggested that these lesson-based discussions offered novice teachers relevant critiques, compliments, and suggestions for their teaching practices and, thus, the opportunity for them to better understand and improve their teaching through such interactions. This finding also raises an interesting question: What makes Chinese teachers able to offer critiques, compliments, and suggestions for their colleagues in a straightforward manner while such situations were seldom observed in the United States when experienced teachers discussed novices' lessons (Strong and Baron, 2004)?

In addition, teachers' abilities to reason about teaching and apply their thoughts to specific teaching contexts are important for effective teaching (Floden et al., 1990; Kennedy, 1991; Leinhardt and Greeno, 1986). Our analysis in this study clearly showed that most topics in the three lesson-based discussions were supported with reasons, examples, or both. Thus, these discussions offered the novice teachers an opportunity to learn how to articulate reason- and example-based discussion on teaching practice. In contrast, findings of research in the United States suggested that U.S. teachers were often unable to articulate their thinking behind their instruction with their colleagues (Carter, 1990; Feiman-Nemser and Buchmann, 1987; Kagan, 1992). Why is there this difference in these two countries in teachers' ability to articulate thinking underlying their practice? Further study is necessary to explore such a question.

Emerging from comparative studies of teaching is a new perspective that examines teaching and teacher's work as culturally scripted practice (Hiebert, Gallimore, and Stigler, 2002; Stigler and Hiebert, 1999). Our analysis so far suggests the substantial similarities exist between the three lesson-based discussions selected from different subject areas, grade levels, and schools in this study. Such similarities in contrast with those findings from existing studies in U.S. contexts encourage us to consider the nature of the lesson-based discussion as culturally scripted and the contrived Chinese curriculum and teaching organization might script the major characteristics of the discussions in two ways.

First, the substantial focus on the relationship between teaching, subject content, and students in all three cases seemed to be consistent with the contexts in which Chinese teachers work regularly in the subject-content-based teaching research group (Wang and Paine, 2003). Such a context might shape the lesson-based discussions in terms of subject content as well as students' understanding of it. In contrast, the U.S. individualized teaching context could prevent teachers from developing a focus on subject content in their lesson-based discussions (Fernandez and Chokshi, 2002; Parks, 2008).

Second, centralized curriculum provides Chinese teachers with common goals, contents, texts, and requirements for their teaching, and the teaching research group schedules and regularly organizes novices to teach public lessons for colleagues to critique (Wang, 2001). These contexts not only might help form a common ground on which Chinese teachers' instruction can be examined in public but also make such a critique and reasoning necessary. In our analysis, the prevailing topics of critique, contextualized reasoning, and suggestions for teaching in all three cases were consistent with this contrived curriculum context and teaching organization. In contrast, when working under a decentralized curriculum context (Cohen and Spillane, 1992) and individualized teaching organization (Feiman-Nemser and Floden, 1986), U.S. mentors seldom critique novices' lesson, provide substantial reasons and examples to support their dialogues, and offer fewer direct suggestions (Strong and Baron, 2004; Wang, Strong, and Odell, 2004).

It is a popular assumption in literature that any contrived collegiality administratively structured and imposed presents difficulties for the creation and persistence of a collaborative relationship among teachers (Cochran-Smith, 2005; Hargreaves and Dawe, 1990). Following this assumption,

teachers' lesson-based discussions under the influence of centralized curriculum and imposed teaching organization might constrain their autonomy and creativity in developing their own curriculum materials and instructional strategies and silent their voices in the discussion supposed to help them learn to teach.

However, in this study, we found that not only were Chinese teachers able to offer contextualized compliments, reasonable critiques, and specific suggestions for novice teachers but also the voices of Chinese novice teachers seemed to be strong in the lesson-based discussions as they explained and defended their own ideas and practice. Such a finding challenges the assumption about the negative influences of contrived curriculum and teaching organizations on teachers' knowledge development in literature (Helsby and McCulloch, 1996; Thiessen, 2000) and calls for reconceptualizing the influences of contrived curriculum contexts and teaching organizations on lesson-based discussions and, thus, novice teachers' learning to teach.

In conclusion, our study suggests that the effective lesson-based discussions are not simply the result of chance, time, and resources for teachers to observe and talk about each others' lesson, but also it may be the result of broader curriculum and teaching contexts, in which teachers' instruction and discussions are situated. It is important for teacher educators to pay more attention to what and how teachers talk about their teaching and identify the influences of the broader contexts of curriculum and teaching organization on such discussions. Such attention is especially important for teacher educators who are reforming teaching through setting up curriculum and teaching standards and pushing interdependent relationships among teachers for their work (Darling-Hammond and Ball, 1998; Hargreaves, 1994). It is also necessary for those who are devoted to improving teaching through decentralizing the curriculum system and teachers' work (DeLany, Wang, and Paine, 2001). Our exploration does not conclude this task but, we hope, functions as an inspiration for further research in this direction.

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Teacher Reflection

What It Is and What It Does

Fred A. J. Korthagen

ABSTRACT

Rigorous research on outcomes of promoting reflection is rare. Moreover, as conceptualizations of reflection depend on underlying philosophies of education, many claims about effects of promoting reflection are questionable. A few research studies do show positive effects on supervisory discourse and journal writing, although school contexts often have a limiting influence. Our own research, which included a longitudinal study, showed effects on the quality of graduates' interpersonal relationships with students, adequacy of perception of these relationships, and job satisfaction. These were mainly long-term effects. During their first half year of teaching, graduates initially seem to go through a latency period in which the ability to reflect disappears. Moreover, differences in outcomes are related to learning orientations. Students' learning orientations were investigated by means of the Internal External Orientation (IEO) test, which showed correlations between reflective attitude and age, previous schooling and gender. Consequences for teacher education and research are discussed.

INTRODUCTION

As Gore (1987) stated, since the beginning of the 1980s, almost all teacher educators have adopted the concept of reflection and consider it central to

teacher learning, and this is still the case (Martin, 2005; National Council for Accreditation of Teacher Education, 2008; Rich and Hannafin, 2009; Rosaen et al., 2008). However, a shocking discovery one can make when screening international literature on the issue of promoting reflection is that there is very little high quality research on the effectiveness of teacher education programs aiming at the promotion of reflection. Even if we assume that promoting reflection is effective, one may well ask: effective toward what end? When we pose this question, we enter an area populated more by beliefs and convictions than by strong empirical evidence.

Below, we will first analyze the causes of this lack of rigorous research on the promotion of reflection. We will show that a major cause is the confusion about the concept of reflection. In the third section, we will discuss some other methodological problems in the research in this area. The fourth section discusses a few exceptions: strong research studies that did yield some empirical evidence regarding outcomes of promoting reflection in teacher education. In the next section, we will describe our own research on a program aiming at the promotion of reflection. Finally, we will discuss our conclusions and put forward suggestions for the pedagogy of teacher education and for further research.

CONCEPTUALIZING REFLECTION

A major problem in the research on effects of teacher education programs aiming at the promotion of reflection is the difficulty of how to conceptualize reflection. Almost all researchers agree on the fact that reflection is a special form of thought (Grimmett, 1988; Hatton and Smith, 1995) and that the origin of the concept lies in the work of Dewey (1933), who warned against too mechanical a focus on teaching methods in the preparation of teachers. In spite of this common origin, modern views of reflection differ substantially, if made explicit at all (Day, 1999; Hatton and Smith). We will give some examples illustrating the variety of notions that can be found in this area.

An author often quoted is Schön (1983, 1987). He distinguishes between *reflection-in-action* and *reflection-on-action*. Schön states that reflection-in-action and experimentation go together:

When someone reflects-in-action, he becomes a researcher in the practice context. He is not dependent on the categories of established theory and technique, but constructs a new theory of the unique case. His inquiry is not limited to a deliberation about means which depends on a prior agreement about ends. He does not keep means and ends separate, but defines them interactively as he frames a problematic situation. (Schön, 1983, p. 68)

Reflection-in-action is limited to what Schön calls the *action present*: “the zone of time in which action can still make a difference to the situation” (Schön, 1983, p. 62). This is not the case in reflection-on-action, which takes place *after* the action itself. Reflection-on-action occurs when, during a routine action, we are confronted with an unexpected result (Schön, 1987, p. 26). This reflection-on-action can change our future actions. According to Schön, reflection-on-action implies inquiry into the personal theories that lie at the basis of one’s actions.

To several authors, reflection has an emancipatory or otherwise ethical meaning. Ross (1987), for example, relates reflection to rationality and responsibility: “Reflection is a way of thinking about educational matters that involves the ability to make rational choices and to assume responsibility for those choices” (p. 1).

Zeichner’s (1983) view of reflection is strongly grounded in the work of Habermas (1973) and further elaboration of this work by van Manen (1977). It implies the acceptance of a particular ideology, along with its accompanying assumptions and epistemology (Gore, 1987; Hatton and Smith, 1995). Within this ideology, the emphasis is on the degree to which teachers critically reflect on the moral, ethical, political, and instrumental values embedded in their everyday thinking and practice (Zeichner, 1983, 1987; Liston and Zeichner, 1990; Valli, 1990).

A completely different approach is described by Cruickshank and colleagues (1981). Here the object of reflection is the effectiveness of instructional strategies in attaining given ends. This more technical approach is most probably based on a view of the teacher as a competent, highly technical person (see Gore, 1987), although Cruickshank and colleagues also state that their aim is to develop in students good habits of thinking about teaching, in order to become “wise as teachers.”

Pollard and Tann (1995) combine the goal of reflecting on aims and consequences of one’s own actions as a teacher and the goal of enhancing

technical efficiency. In their view of reflection, both goals are important reasons for promoting reflection.

Although this brief overview of conceptualizations of reflection is far from exhaustive, it shows that there is no unanimity with regard to a definition of reflection. One important aspect on which conceptualizations of reflection differ is the question of what educational aspects are important to be reflected on (Calderhead, 1989; Hatton and Smith, 1995). This question is directly related to the question of what constitutes a good teacher.

In approaches that conceptualize reflection as critical inquiry, advocated by such authors as Zeichner (1983) and also Carr and Kemmis (1986), a good teacher is a critical, inquiring professional. This view is linked to a specific view of the aims of education in schools, namely, to make students critical, responsible citizens. It will be clear that researchers who emphasize other elements of “a good teacher” will come to other conceptualizations. For example, if one sees a good teacher as someone who helps students to perform well on standardized tests, a completely different operationalization of reflection presents itself. Probably one would then describe reflection in terms of the degree to which the teacher systematically thinks about methods to achieve high test scores. We can conclude that reflection is a highly normative concept.

WEAKNESSES IN THE EMPIRICAL RESEARCH ON PROGRAMS DESIGNED TO PROMOTE REFLECTION

Given this normative nature of the concept of reflection, a major problem with much of the research in this field is a lack of explicitness about underlying philosophies of education. This makes many claims about effects of promoting reflection questionable or at least unclear. What are needed are coherent theories, in which not only the concept of reflection is clearly defined but that also describe the relationship between effects of the promotion of reflection and views of good teaching. As long as such theoretical frameworks are missing, prescriptive statements about reflection are questionable, simply because individual views on the goals of education are questionable. Prescriptive statements may be of importance to someone sharing those views, but even this is not always true since such statements often lack a solid empirical basis.

Not only do researchers often fail to present such coherent theories but there also are more methodological problems in the research on promoting reflection. For example, many claims about program effects are also presented without a careful description of the program itself, which makes it hard to see clear relations between interventions and outcomes. Moreover, many studies rely heavily on comments made by student teachers during course evaluations, as well as on self-reports, general observations, and isolated anecdotes. Cochran-Smith and Zeichner (2005) state that this lack of solid evidence is a more general problem in research on the pedagogy of teacher education.

A final problem in researching reflection is that much of what we are attempting to measure takes place in the teacher's head. Although techniques such as stimulated recall (e.g., based on recordings of teaching activities) and the analysis of supervisory discourse or logbooks may be helpful, the question always remains whether these methods present us with valid data about what really happened inside the person. In many cases one could wonder whether the research instrument itself was not the main incentive that caused the reflection observed in the respondent.

SOME STRONGER EMPIRICAL STUDIES

As a result of such methodological complications, not many rigorous studies have been published in this area, as already noted above. Rich and Hannafin (2009, p. 52) state that "reflection was not addressed in the 800+ page report published by a comprehensive review of research in teacher education spanning the preceding 25 years" (Cochran-Smith and Zeichner, 2005). The few stronger studies that do exist on programs aiming at the promotion of reflection are relatively old. They were mainly published in the 1980s or 1990s, although in the last decade more specific program elements for encouraging reflection have been studied, such as the use of portfolios or video recordings of student teaching.

One conceptualization of reflection that has led to some empirical evidence regarding outcomes of a program based on the promotion of reflection is the one developed by Zeichner (1983), which has already been mentioned above. Based on a clear description of both their view of reflection and a program based on this view, Zeichner and Liston (1987) discuss two

studies carried out at the University of Wisconsin, which evaluated the effects on student teachers' perspectives toward teaching. They conclude that the program had little effect on those perspectives, due to socialization into established patterns in the schools. On the other hand, given the frequently noted shift from an initially humanistic orientation of student teachers to a more custodial one, "It could be argued that both Wisconsin studies indicate that the inquiry-oriented student teaching program stems the onrushing move toward a more custodial view" (Zeichner and Liston, 1987, p. 36).

Zeichner and Liston (1985) assessed the degree to which the reflective orientation characteristic for the Wisconsin program was present in post-observation supervisory conferences. They used a so-called reflective-teaching-index, based on the degree to which different types of discourse occur: factual (what occurred in a teaching situation or what will occur), prudential (suggestions or evaluations), justificatory (reasons for choices), and critical (the assessment of the adequacy of justifications for pedagogical activities, and the examination of values and assumptions embedded in the curriculum and instructional activities). They found that almost 20 percent of the discourse time represented attention to the latter type of communication and that the conceptual levels of student teachers affected the degree of reflective discourse taking place during the conferences. The authors consider these findings an indication of a partial implementation of the program's goals.

These studies present us with some evidence that the University of Wisconsin teacher education program was successful in attaining at least some of its goals; in particular, it seemed to help student teachers to view the student-teaching context with a more critical eye and make them more reflective about their own role as teachers (Zeichner and Liston, 1987, p. 40). On the other hand, Zeichner and Liston also refer to research that showed that the program did not succeed in its goal of promoting student teachers to act collaboratively within small groups on issues of authority and autonomy and that certain views of teachers as moral craftpersons were not implemented.

During the 1980s, a five-year preparation program was in operation at the University of Florida, based on Ross's notion of reflection, and attempts have been made to investigate the developmental processes of pre-service teachers in this program (e.g., Weade and Ernst, 1989), as well as the effects of program elements on these students (e.g., Krogh and Crews,

1989). The results emphasize such factors as the role played by student teachers' and teacher educators' beliefs and philosophies of education, which have their roots in the personal history of the individual, the influence of the school context, in particular the degree of support forthcoming from the schools with regard to the goal of promoting reflection, the need for structure in logbook writing (Krogh and Crews, 1989), and the danger that a high degree of reflectivity can lead to self-criticism and a low sense of efficacy (Ashton, Comas, and Ross, 1989).

An operationalization of reflection concurring with the approaches of Zeichner and van Manen, and useful for the analysis of written texts, has been described by Hatton and Smith (1995). They analyzed the reflective writings of student teachers and distinguish between (1) *descriptive writing*, which is not reflective as it involves no attempt to provide reasons or justifications for events or actions; (2) *descriptive reflection*, which shows attempts to provide such reasons or justifications but still in a narrative or descriptive way; (3) *dialogic reflection*, demonstrating "a stepping back" from the events or actions, leading to a different level of mulling about, discourse with self and exploration of the experience, events, and actions, using qualities of judgments and possible alternatives for explaining and hypothesizing; (4) *critical reflection*, demonstrating an awareness that actions and events are not only located in, and explicable by, reference to multiple perspectives but are located in, and influenced by, multiple historical and sociopolitical contexts. Hatton and Smith showed that in a four-year teacher education program at the University of Sydney, student teachers clearly showed evidence of descriptive reflection in their final year, and instances of dialogic and critical reflection were also found. Hatton and Smith noted that dialogic reflection was highly promoted through "critical friends" interviews.

Although these are a few examples of empirical studies that did provide evidence of program effects, it is important to note that many attempts to operationalize reflection or establish outcomes of promoting reflection have failed, as many researchers in this field have observed (e.g., Korthagen et al., 2001, p. 57). Indeed:

The terms are extremely difficult to render operational in questionnaires and other research instruments. Then it would appear that it has been a considerable challenge to develop means for gathering data and analyzing data so

that the evidence shows unequivocally that reflection has taken place. (Hatton and Smith, 1995, pp. 38–39)

One of the major problems is that it is impossible to determine on the basis of essays written about an experience whether or not reflection-in-action or reflection-on-action has taken place during or after the experience, as these essays “provide only indirect evidence of either kind of reflection, and no way of distinguishing what is being thought about *now* in contrast to *then*” (Hatton and Smith, 1995, p. 42).

In the next sections we will describe our own research into a Dutch program for the preparation of reflective secondary school mathematics teachers. We will do so in a manner that takes the outcomes of the above analysis into account.

A DUTCH TEACHER EDUCATION PROGRAM AIMING AT THE PROMOTION OF REFLECTION

The program that we studied was in operation during the 1970s and 1980s, at a teacher education college in Utrecht, the Netherlands. At the time of the research studies, it was a four-and-a-half-year program with cohort groups, in which student teachers selected a second subject, in addition to mathematics. An aggregate of one year, distributed over the four-and-a-half-year period, was devoted to professional preparation, which was strongly integrated with the subject matter component of the program.

In line with our above analysis, we will first describe the view of good teaching underlying this program, the definition of reflection the program was based on, and the program itself. In the next sections, we will focus on the design and results of four research studies into this program.

The Underlying View of Good Teaching and Reflection

We analyzed the views of the staff of the mathematics teacher education program (during the period in question consisting of 10 to 13 teacher educators), using document analysis (there were a great many formal and informal papers available, written by staff members), and interviews with a few staff members. A verification of this analysis was carried out

by means of a study among 139 graduates and students, who, in questionnaires and interviews, were asked to give the characteristics of their preparation program. Moreover, the views of the staff were translated into a questionnaire consisting of 46 statements, which were scored by all the teacher educators on a 5-point scale.

The views of the program staff appeared to be strongly influenced by the context of Dutch secondary school mathematics education, which in the 1970s saw a surge in the direction of “realistic mathematics education” (Freudenthal, 1991). This entails the use of concrete problems and real-world contexts. Students were taught to translate a problem from reality into a mathematical model, to apply mathematical techniques within that model, and then to translate the mathematical solution into the best possible solution in the real world. Students were thus required to analyze, to distinguish between matters of major and minor importance, to structure, to combine theory and practice, and to devise creative alternative solutions and methods of problem solving. Within this context, collaborative learning and metacognitive strategies received explicit consideration. This process-oriented view of mathematics education influenced the thinking of the teacher educators in the program under study. The promotion of the ability to analyze, to structure, and to devise creative solutions was among the basic educational goals, both for students in mathematics classrooms and for the student teachers. As regards the latter group, these goals were pursued not only in the mathematics component but also in the professional preparation component of the program. The aim was to produce student teachers ultimately capable of independently structuring their professional experiences, by using the ALACT model of reflection, named after the first letters of the five phases: Action, Looking back on the action, Awareness of essential aspects, Creating alternative methods of action, and Trial (see figure 17.1; for a more detailed description, see Korthagen et al., 2001).

This model, which is an adaptation of the well-known model developed by Kolb and Fry (1975), has also been used in many other teacher education programs throughout the world (see, e.g., Brandenburg, 2008; Hoel and Gudmundsdottir, 1999; and Jones, 2008). The process described by this model implies a specific conception of reflection, as the crux of this process lies in phase 3 of the model, where a mental structure is formed or an existing mental structure altered. This concurs with the following

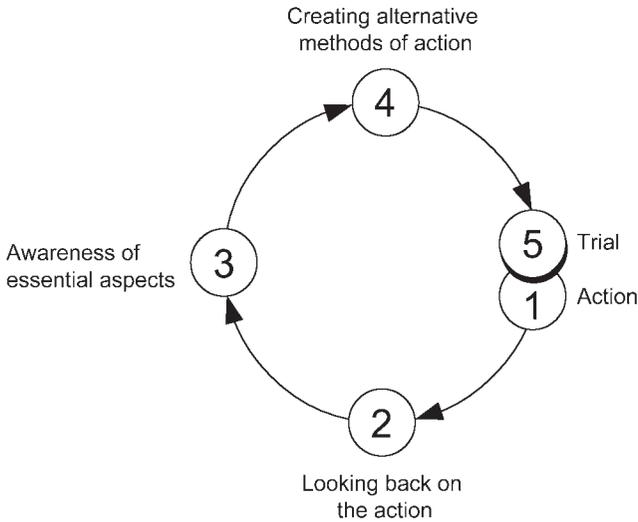


Figure 17.1. The ALACT model.

definition of reflection: *Reflection is the mental process of structuring or restructuring an experience, a problem or existing knowledge or insights.*

Program Description

In the view of the program staff, reflective teachers are capable of tracing the ALACT cycle for all aspects of the teaching and learning situation, for example, mathematical situations, interpersonal relationships in the classroom, and their own development as a teacher. *Learning how to reflect* using the ALACT model was an important program goal, which aimed at the development of the capacity to self-direct one's own professional growth. Student teachers learned how to reflect *before* embarking on student teaching. The first period of student teaching can be one of extreme stress, in which the prime concern is simply to "get through." Hence it is not an auspicious moment for learning how to reflect. An important assumption was that prospective teachers must already have at their disposal sufficient powers of reflection to enable them to evaluate the influence of such personal concerns on the way they themselves function in the classroom (cf. Goodman, 1985). This means that in the first year of the program other experiences were used for reflection. First of all, there was

a special practicum, in which student teachers learned to reflect on their own thoughts, feelings, attitudes, and actions in everyday relationships with their fellow students. This practicum also contained exercises aiming at the promotion of social skills, such as empathy, expressing feelings, and so forth.

The processes involved in learning the mathematical content in the program were also used as objects of reflection. Student teachers were encouraged to reflect both on the subject content and also on the way they helped or cooperated with their fellow students. At regular intervals, the students were asked to hand in written reports on the way they worked on a particular mathematical problem. In this way, not only the mathematical product was stressed but also the mathematical inquiry process.

Throughout the program there were several points at which the student teachers were allowed a choice. They had a say in the general curriculum, and in mathematics courses they were often given a choice of materials. There is a close link between learning to reflect and learning to choose: pondering past or future choices compels prospective teachers to reflect on their own goals and attitudes. Individual interviews and the students' logbooks, to which the supervisors added their comments, encouraged the student teachers to reflect on the various choices open to them and helped them to develop their own style of teaching.

It was not until the second year that student teachers actually became involved in practical teaching. The first stage was helping individual secondary school students (a one-to-one arrangement). This eliminated the problem of controlling a whole class and gave student teachers enough safety to devote their full attention to individual learning processes and pedagogy. Here, too, the use of the logbook and college-based supervision were important in stimulating reflection.

The first classroom experience took place at the end of the second year. A primary school class (11- to 12-year-olds) was divided into two or three groups. During a period of six weeks each student teacher worked with his or her own group of about eight children for one to one-and-a-half hours a week while the cooperating teacher was not present. The group of two or three student teachers teaching children from the same class was supervised by a teacher educator. This supervision was based on the students' logbooks and the supervisor did not visit the school, which means that

the student teachers were given a large measure of freedom and responsibility. This helped prospective teachers find their own personal style of teaching and, more important, it stimulated reflection on personal style and growth.

In the third and fourth years, student teachers worked with whole classes at secondary school level and were supervised by cooperating teachers. To provide effective supervision these teachers were trained for this role, with a focus on promoting reflection with the aid of the ALACT model.

STUDY 1: AN OVERALL PROGRAM EVALUATION

An initial overall evaluation of the program consisted of a written survey among 116 graduates and 13 student teachers on the point of graduating, supplemented by interviews with 10 of them. The most important questions in the questionnaire were:

1. What have you learned during your teacher education period?
2. What do you think was lacking in your teacher education program?

Findings

We will now discuss the most important findings of this study. On the first question, more than half of the respondents *spontaneously* mentioned learning results in the field of reflection and directing one's own development. In answer to the second question, many teachers, especially those working in lower vocational schools, reported difficulties in controlling the class and in handling motivation problems.

Another important research finding was that the respondents differed in their appreciation of a reflective way of learning. On the basis of the data, we could distinguish between *internally* and *externally oriented* student teachers. The former are students wanting to use their own knowledge and values to structure problems and experiences *themselves*. Externally oriented student teachers feel a strong need for guidelines and structuring from outside (e.g., from teacher educators).

STUDY 2: THE IEO TEST

After distinguishing between internally and externally oriented student teachers, we devised a questionnaire to measure these learning orientations, called the IEO test for Internal/External Orientation (Korthagen, 1993). There are two versions of this test: one designed for student teachers in the initial stage of the preparation program and the other intended for teachers or student teachers with experience in classroom teaching.

Table 17.1. Three Representative Items from Each Scale of the IEO Test (Version 1, items translated from dutch)

<i>No.</i>	<i>Item</i>	<i>Scale</i>	<i>Type</i>	<i>M</i>	<i>SD</i>
47	I ask myself "Who am I?"	SI	b	3.23	1.26
57	I think about my own development.	SI	b	3.33	1.15
60	I reflect on myself.	SI	b	3.60	1.10
18	I appreciate it when people tell me how I can improve my conduct.	SE	a	3.81	0.88
31	I want people to tell me what I am doing wrong.	SE	a	3.75	0.95
40	I like it when others comment on my behavior.	SE	a	3.55	0.89
25	I am interested in my fellow students.	FI	a	3.64	0.89
42	I try to get to know my fellow students.	FI	a	3.53	0.90
54	I am interested in the problems of my fellow students.	FI	b	2.72	0.98
33	I am interested in tips on the best way of working with my fellow students.	FE	a	3.23	0.95
35	I consider it important to receive information from a supervisor about my way of dealing with my fellow students.	FE	a	2.92	1.09
43	I think it is important to be given suggestions for better ways of cooperating with my fellow students.	FE	a	3.17	1.00
30	I can spend hours working out a mathematical problem.	MI	a	3.29	1.42
51	I try to solve mathematical puzzles in my spare time.	MI	b	2.53	1.12
53	I sometimes go on thinking about mathematical problems that have come up.	MI	b	3.12	0.97
4	I like to have the support of others when I am working on mathematical problems.	ME	a	3.65	1.02
26	I like to work on mathematical textbooks in which everything is explained step by step.	ME	a	3.64	1.16
32	I like it when someone shows me how to solve a certain type of math problem.	ME	a	3.56	1.00

Version 1 consists of six subscales, concerned with internal (I) and external (E) learning orientations in the following domains: (S) the prospective teacher himself or herself, (F) the fellow students, and (M) the subject matter in the program (mathematics) (see table 17.1.) A pilot study had revealed that the learning orientations of student teachers differ in these domains (Korthagen, 1988). Each scale is composed of two types of items. Type a asks the students to indicate to what extent a statement is correct, type b items ask how often the student does something. Both types of items are scored on a 5-point scale, with a score of 5 meaning totally applicable (type a) or always (type b).

Version 2 of the IEO test (for teachers or student teachers with teaching experience) consists of eight subscales, namely two scales (for the degree of internal orientation and the degree of external orientation) for each of the following domains: (S) the teacher himself or herself, (P) the students in the school, (M) the subject matter at school (mathematics), and (C) the school context.

Version 1 of the test was administered to first- and second-year mathematics students in the program and in two other colleges of teacher education in the Netherlands ($n = 138$). From table 17.2 we can conclude that the test is a reliable instrument.

We used the IEO test to determine whether mathematics students did indeed acquire a more pronounced internal learning orientation during the Utrecht program. By means of a t-test we compared the SI, FI, and MI scores of the 37 students majoring in mathematics with those of 55 students of the other two colleges likewise majoring in mathematics. The choice of mathematics majors is important here, since it was only the majors who were taught according to the principle of promoting reflection. In the mathematics department of the two other colleges, this was not an explicit goal.

Table 17.2. Reliabilities of the IEO Scales ($n = 138$)

	<i>Scales</i>					
	<i>SI</i>	<i>SE</i>	<i>FI</i>	<i>FE</i>	<i>MI</i>	<i>ME</i>
Number of items	11	10	10	10	10	10
Cronbach's alpha	.87	.77	.87	.81	.85	.80

Findings

The Utrecht students did not score significantly higher on the three internal scales than the students of the other teacher colleges. It is important to note that the group studied consisted of first- and second-year students. Any results of the promotion of reflection may be expected to be realized gradually. It was for this reason that we also compared the scores of first- and second-year Utrecht students on the internal scales. No significant differences were recorded on the FI and MI scales, but on the SI scale (reflection on oneself), second-year students scored significantly higher than first-year students ($p = .02$, on a one-tailed t -test). However, second-year students of the other colleges also scored significantly higher on SI than first-year students, although the difference was somewhat less marked (table 17.3).

We also used this study to determine how the extent to which student teachers are internally or externally oriented in the domains “self,” “fellow students,” and “mathematics” correlates with the variables age, previous schooling, and gender. Older students appeared to be less inclined to reflect on their relationships with their peers ($r = -.29$, $p = .01$). We found a tendency of student teachers with a relatively high level of previous schooling to be less externally oriented with regard to the teaching of mathematics ($p = .02$). It was noteworthy that there proved to be almost no relationship between age and an internal learning orientation with regard to oneself ($r = -.03$).

Table 17.3. Scores on the SI Scale of First- and Second-Year Student Teachers Majoring in Mathematics

		<i>First Year</i>		<i>Second Year</i>		<i>t</i>	<i>p</i> (<i>l-tailed</i>)
		<i>n</i>	<i>M</i>	<i>n</i>	<i>M</i>		
All students	Utrecht program	26	3.32	11	3.82	2.04	.02
	other colleges	18	3.20	37	3.56	1.74	.04
Men	Utrecht program	13	3.32	8	3.80	1.47	.08
	other colleges	12	3.18	23	3.46	1.00	.16
Women	Utrecht program	12	3.30	3	3.85	1.31	.11
	other colleges	5	3.44	14	3.73	0.98	.17

Note: A number of subtotals do not tally, due to missing data.

STUDY 3: A LONGITUDINAL STUDY

The phenomenon of internally and externally oriented student teachers also led to a third study with a longitudinal design, focusing on the following research questions:

1. How do students with different learning orientations develop during the program?
2. What is the impact of the program on the development of students with different learning orientations?

We followed a group of 18 students during the program and into their first two years of teaching, using the following instruments:

1. *Teacher educator questionnaires and interviews*. Each year, teacher educators were asked to fill out questionnaires about the student teachers, and they were interviewed to gather more background information about the students and the educators' ideas about the students' development.
2. *Kelly's repertory grid* (Kelly, 1955), which revealed the mental constructs used by teacher educators in evaluating their students.
3. *Interviews* with the students, twice each year, about their opinions of the program, learning results, points of criticism, the characteristics of the program as seen by the students, and their attitudes toward reflection as a means for professional learning.
4. *The IEO test*.

(For more details of this study, see Korthagen, 1988.)

Findings

This study again brought to light a difference between internally and externally oriented student teachers. To illustrate this difference, we will give some examples of statements by respondents.

The respondents with an internal learning orientation made statements such as:

- I have learned to reflect on my teaching. I think this is important because I think it can be helpful when I am teaching on my own. How can I correct myself? What did I do well? What did I do wrong? Why? I think that the ability to do this can be important in difficult classroom situations.
- I have learned to learn, as best I can, from my experiences.
- I have learned to look at my mistakes and to improve myself.
- I have discovered that it helps, and that it is necessary to keep asking myself why I do things in a certain way.
- I have learned to evaluate myself.
- I think the most important thing I've learned is to look at myself, to solve problems by myself, or at least to work out the first steps toward solving a problem.
- I have learned to act self-reflectively, to regularly look back on the way I function as a teacher, and to attach to these actions both conclusions and guidelines for the future.

Externally oriented respondents made the following statements on the program:

- There are too many things you have to find out for yourself.
- It should be clearer what you are supposed to learn, when something is good enough, what is right, and what is wrong.
- Those teacher educators are always asking questions.
- You have to keep telling them what your opinion is, and what you are thinking or feeling.
- Too much has to come from the group, and there is not enough explanation.
- There is no structure.
- I would rather have had a course with the ordinary things you come across every day, like refusing to work, cribbing, and cutting classes.
- How do you deal with situations that have to do with a lack of motivation on the part of the students?

The study revealed that in some cases there was a clash between the implicit conceptions of learning on the part of teacher educators (strongly

based on the notion of reflection) and the learning orientations of the student teachers. One danger in a teacher education program based on the goal of promoting reflection is that it is most beneficial to those who are already fairly reflective (cf. Calderhead, 1989; LaBoskey, 1993).

The longitudinal study showed that after one-and-a-half years, most of the externally oriented student teachers in the research group of 18 had left the program. Although this was often due to poor results in mathematics, the fact that the structure they desired was lacking appeared to be a major motive for the decision to drop out. Of the 18 student teachers in the group, 8 gave up their studies before the end of the second year. The analysis of the data seemed to indicate that some of these students would have benefited from an even more gradual introduction to the reflective approach than the teacher education staff used.

STUDY 4: A COMPARISON OF THE OUTCOMES OF TWO TEACHER EDUCATION PROGRAMS

Finally, our fourth study was carried out in which graduates of the Utrecht program were compared with a control group of graduates of another, more subject matter-oriented program (Wubbels and Korthagen, 1990). The graduates of the Utrecht program ($n = 37$) and the other program ($n = 36$) had been teaching between one and ten years.

In order to test the accuracy of the assumption that the two programs did differ, the graduates were asked to describe the most important characteristics of their program. The written answers were analyzed by an independent researcher, who examined for each characteristic whether it had to do with the issue of reflection. Of the graduates in the control group only 6 percent mentioned an item related to reflection, as opposed to 47 percent in the control group. The item mentioned most by members of the control group (33 percent) was the importance of a good understanding of mathematics, a principle not mentioned by any of the teachers from the Utrecht program. These results confirmed our hypotheses about the characteristics of the two programs.

Next, the graduates were compared with regard to the following variables: (1) reflective attitude; (2) inclination toward innovation; (3) job satisfaction; (4) the quality of interpersonal relationships with the students

in their classes (as observed by their students); and (5) the adequacy of teachers' perceptions of these relationships.

Variable 1 was measured with the IEO test (the internal scales of the second version); the variables 2 and 3 with slight adaptations of questionnaires previously used by Dann and colleagues (1978) and Prick (1985), with 7 and 9 items respectively. The variables 4 and 5 were measured with the QTI (Wubbels et al., 1985), a questionnaire with 80 items, measuring student perceptions of teacher behavior. The QTI is based on a model devised by Leary (1957) for the analysis of interpersonal relationships, with two dimensions, influence (dominance–submission) and proximity (cooperation–opposition). The QTI has been used extensively for research purposes and has proved consistently reliable (e.g., Wubbels et al., 1987). Variable 5 is measured by determining the difference between the students' and the teacher's perceptions of the teacher's behavior.

Findings

This study demonstrated no clear evidence of effects of the program on teachers' reflective attitude and inclination toward innovation. This result is, of course, somewhat disappointing, given the close relationship between these variables and program goals. On the other hand, a noteworthy result was that graduates of this program performed better on the variables quality of interpersonal relationships, adequacy of their perception of these relationships, and job satisfaction than the control group, and these effects were significant for those teachers who graduated more than two years before (Wubbels and Korthagen, 1990). This seems to support the idea that the effect of a program designed to promote reflection mainly surfaces in the long run, a phenomenon also found by Zeichner (1987, p. 573) and Brouwer and Korthagen (2005).

CONCLUSIONS AND DISCUSSION

We may draw a number of conclusions. First, the different conceptualizations of reflection and reflective teaching that researchers use are generally too vague to be used as the starting point for curriculum development

in teacher education. Much clarification and elaboration of the concept of reflection in relation to underlying philosophies of education are needed. This will help us to move beyond vague discussions and beliefs about the benefits of teacher education programs designed to promote reflection and, instead, to build our theories on empirical data concerning program outcomes. This requires not only careful operationalization of the concepts of reflection and reflective teaching but also more rigorous research methods. This is no simple task, considering the fact that much of what we are attempting to influence takes place in the teacher's head. It may explain why so little rigorous research in this field has been published, especially after a few strong studies in the 1980s and 1990s, which did yield some evidence of favorable influences in teachers.

In this chapter, we discussed studies devoted to the effects of programs designed to promote reflection. They also seem to indicate that contextual influences on teacher education have a limiting effect on the potential of those programs (cf. Brouwer and Korthagen, 2005). We believe that contextual influences on teacher development should be an important issue in the research on reflective teaching. It may be necessary to investigate effects of altering the context of student teaching. This requires a specific type of research, for example, action research or self-study research, carried out by teams of teacher educators, in collaboration with teachers and researchers.

The relationship between the promotion of reflection and the quality of teaching has hardly been studied in depth by researchers, or at least not with the aid of strong research methodologies. In our view, effect studies should focus on the question of which program characteristics and program elements are responsible for which effects on teaching and thus on the important practical question of which strategies employed in the preparation of more reflective teachers appear most promising. In order to assess relationships between program characteristics and learning outcomes, we also need longitudinal studies focusing on the developmental processes of teachers, both during their preparation and after (cf. Zeichner, 1987).

Important in our own research studies on the promotion of reflection is that we found effects on the quality of teachers' interpersonal relationships in the classroom, on the adequacy of their perception of these relationships, and on job satisfaction. We also found strong indications that

program effects may take a while to manifest themselves. This was a main result of study 4.

In this context it is interesting to note that in study 1 we saw that even teachers who acquired a strong inclination toward reflection during the program did not benefit much from this attitude during the initial period of their teaching careers. An illustration is given by a graduate who, one year after graduation, not only stressed his learning results in the field of reflection but also said:

I had the experience that the capacity for reflection was pushed away when you meet a cumulation of conflicts. You feel empty. I no longer had any point of reference. And this happened although everything went very well during teacher preparation and during field-based experiences. . . . But the ability to face problems returns. I am growing again. I just stood still for a while.

This example is similar to other stories reported by the graduates. After one or two years, lost ideals got a new chance as well, many of the respondents reported. The results of study 3 were in line with this finding: When the teachers in this longitudinal study were in their first year of teaching, they showed a decrease in reflection about the relationships between their ideals and their everyday teaching practice, but at the same time they were very aware of this phenomenon. These graduates of the Utrecht program seemed to use a strategy of both temporary adjustment to established patterns of school practice and waiting for the moment they saw a chance to realize their “latent” ideals. On the basis of our findings we suggest that the ability to reflect tends to pass through a so-called latency period, which generally lasts between half a year and two years.

Another important conclusion from our own research is that a more gradual approach to reflection may benefit more externally oriented students. It may be advisable in the initial stages to offer these students the external structure they prefer. We refer to this as *a strategy of gradualness* (also advocated by Hatton and Smith, 1995). Otherwise, externally oriented students’ feelings that they do not really benefit from their studies can become a self-fulfilling prophecy. The teacher educator can help externally oriented student teachers by not expecting them to be able to figure out everything for themselves right from the start and by giving them concrete instructions, offering them choices and providing sufficient

feedback. The use of logbooks provides opportunities to give student teachers individual feedback on their learning process, and this may be especially helpful for externally oriented student teachers. “Make haste slowly” is the watchword here.

An emphasis upon reflection too soon in their preparation may be alienating to neophytes. It can become difficult to sustain, for student teachers may see it as a rather esoteric and useless diversion from mastering the technical skills and content of teaching which they regard as essential, especially early in their training. (Hatton and Smith, p. 36)

We have the experience that having student teachers reflect on short lessons to their fellow students (lessons of about ten minutes), at least in the beginning of a program, seems more effective for the promotion of reflection than asking them to analyze longer lessons or lessons given to students at school and focusing on issues that are not their first concern.

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The Meno Paradox of Teaching Reflection in Teacher Education

Anne Rath

ABSTRACT

This chapter explores how a mentored portfolio process in a secondary teacher education program can impact on preservice teachers' perspectives on knowledge construction, teaching, and learning. The portfolio in mentoring preservice teachers' reflective engagement with problems of practice uncovers tacit teaching archetypes that run counter to current views of teaching and learning. Engaging with these constructs is viewed as a necessary starting point for reflective engagement. The process of coming to know, which students report in their ongoing documentation and engagement with practice problems, sponsors a view of knowledge as tentative, open-ended, and context dependent. This practice knowledge, when put into generative conversation with theoretical and curricular frameworks, marks subtle epistemological shifts in their relationship to themselves as knowers, their identity as teachers, their students, and their subjects. This leads to a new awareness of the moral consequences of their teaching decisions on students and to take responsibility for their practice decisions. Reflection on this is crucial if we want teachers who are equipped with the knowledge, skills, and dispositions that are needed for twenty-first century schools.

Like Meno, the design student (teacher) knows she needs to look for something but does not know what that something is. She seeks to learn it,

moreover in the sense of coming to know it in action. Yet in the beginning she can neither do it nor recognise it when she sees it. Hence, she is caught up in a self-contradiction: “looking for something” implies a capacity to recognize the thing one looks for, but the student lacks at first the capacity to recognize the object of his search. The instructor is caught in the same paradox: he cannot tell the student what he needs to know, even if he has words for it, because the student would not at that point understand him. The logical paradox of the Meno accurately describes the experience of learning to design. (Schön, 1987, p. 83)

Schön (1983), in his landmark book *The Reflective Practitioner*, began a new conversation that identified reflective practice as a key competency and skill in professional education. His book challenged the dominant epistemologies of universities that privileged theoretical knowledge over practice knowledge. In the extended quote above, Schön graphically depicts how teachers and learners are caught in a Meno paradox that causes them to work at cross purposes to each other. In this chapter, I maintain that the Meno paradox is an apt metaphor for describing the confusion and frustration that occurs when teaching reflective practice in teacher education. The learning goals and purposes of the teacher candidate and teacher educator are rarely aligned or explicated sufficiently to allow for active engagement, negotiation, and co-construction of the learning environment (Korthagen, 2001; Loughran, 2006; Zeichner, 2006). Research demonstrates that student teachers bring “teaching archetypes” to learning to teach, constructed through long “apprenticeships of observation” that depict both the teacher and learner in static mode; the former as the expert purveyor of knowledge and the latter as passive receiver of received knowledge (Lortie, 1973). This view runs counter to social constructivist and reform-oriented teaching models in knowledge-based societies (Britzman, 1991; Bullough, 1992; Darling-Hammond, 2006; Darling-Hammond and Bransford, 2005). Sugrue (1997) argues that these conceptions of teaching yield both the “form (socio-historical situatedness) and the content (beliefs, attitudes, dispositions and behaviours) of their teaching identities” (p. 214). Furthermore, researchers have argued that traditional teacher education structures do little to engage with student teachers’ epistemic or emotional commitments in a systematic way (Korthagen, 2001; Loughran, 2006; O’Loughlin, 2009; Zembylas, 2003). This might explain why teacher education is viewed as a weak

intervention in changing teaching archetypes (Feimen-Nemser, 2001). I maintain that in order to transform these unexamined teaching archetypes into more dynamic expansive teaching identities, teacher educators must systematically engage students as meaning-makers and that this student knowledge be viewed as an anchor point for teacher education design.

New learning imperatives require epistemic shifts on the part of both groups and the purposeful construction of learner-centered environments (Korthagen, 2001; Loughran, 2006). A key goal in teaching reflection is to provide students with such a learning structure and one that engages them adequately with the complexity of teaching. A teacher's goals, values, and commitments are indelibly connected to what they view as legitimate knowledge and practice. Underpinning a knowledge-based society is equipping students with the kinds of thinking skills that empower them to evaluate and judge conflicting knowledge claims and to be willing to commit to the kind of intellectual effort this entails (Kuhn, 2005). The process of coming to know, which students report in their portfolios and interviews, empowers them to have the tools to construct situated practice-based knowledge in new ways. These situated practices become new professional values that mark subtle epistemological shifts in their relationships to themselves as knowers and learners, their students, their subjects, and their contexts.

This chapter presents a process for teaching reflection through a mentored portfolio structure that scaffolds reflection as both the method and medium for learning to teach (Freidus, 1998, Lyons, 2006). I argue that the portfolio structure provides a space for student teachers to examine and transform themselves as teachers and to illuminate hegemonic and static teaching archetypes. It also provides the teacher educator with a knowledge base from which to design responsive pedagogical strategies that develop student teachers' capacities to engage in new practices of inquiry and meaning-making and new models of interaction with peers, tutors, and teaching contexts. Thus, the portfolio structure requires a dual focus: (1) a shared understanding of what teacher reflectivity is, on the one hand, that places demands on teacher educators to develop a discourse community committed to interrogate practice; and (2) a commitment to providing learning-centered pedagogical structures that are responsive to students' needs as learner teachers situated in particular contexts, while at

the same time bringing this situatedness into conversation with the larger knowledge base of teaching.

Following, I will briefly describe my stance and questions, my teaching context in the Republic of Ireland, the portfolio project, and data collection and analysis. Then I will briefly situate reflective practice theoretically describing how I came to own the portfolio as a tool for developing habits of reflection and ownership of the learning process for student teachers. Finally, I will describe some of the significant themes that arise from my research. This chapter is an exploratory one that focuses on the impact of the portfolio development process from the perspective of the learner. I do not present evidence to substantiate claims in action or classroom practices or to make generalizations to a wider population. Rather, my intent is to highlight some of the complexities in mentoring reflective engagement in teacher education.

MY STANCE/QUESTIONS

Belenky, Clinchy, Goldberger, and Tarule's 1986 research in *Women's Ways of Knowing* has been a pivotal influence on my approach as a teacher educator. Their research identified how epistemological stances are deeply connected to the kinds of contexts people have access to in education. Their research promotes the concept of the *midwife teacher*, that is, a teacher who creates dialogue-rich learning contexts that encourage learners to come to voice. They highlight voice as a metaphor for human development and growth and view the development of voice, self, and mind as being inextricably linked. This is a key concept I use in understanding the reflective process. My goal in portfolio work is to create the kind of learning space where students can hear their own thinking and felt processes and come to voice it in a community of learners. As a narrative researcher, I attend to how students use language to present their ideas and how this language use shapes their experience of themselves as learner teachers.

I view the portfolio structure as a scaffolding structure for student teachers' voices and concerns to become visible and central to the educative experience of learning to be a teacher. This is considered an act of theory making and my role is to "midwife" the participation of novice teachers

in current educational debates including the contestation of hegemonic views of teaching and learning that have disconnected students from their own knowledge base. My role as a teacher educator is to help student teachers author their own stance and put their concerns into conversation with wider theoretical frameworks in order to develop tools to expand and challenge them. Shulman (1998) writes that what is “declared worth documenting, worth reflecting on, what is deemed to be portfolio worthy, is a theoretical act” (p. 24). I see voice and stance as similar. I suggest that in constructing a portfolio students are mapping out a professional stance or identity. In mapping out this stance they learn the skills and dispositions to interrogate and bring their questions and puzzles to the public domain within a community of peers who may interpret phenomena in different but equally valid ways. Developing an inclusive stance and a stance that engages the full diversity of the funds of knowledge that students bring to learning is important given the increasing acknowledgement of diversity and the concomitant press by political and market forces to reduce the complexity of learning to measurable learning outcomes or competencies. I bring the following questions to this work:

- How can I nurture the voices of student teachers so that they in turn will nurture their own students’ voices?
- What kinds of teaching environments interrupt habitual ways of being and knowing that have traditionally placed students as passive receivers of knowledge?
- How can the moral implications of teaching decisions and the attendant responsibilities of teachers become an integral part of professional education?

The mentored portfolio process can provide a focus for helping teacher candidates to think in certain ways. Mentoring work requires an environment where student teachers are safe to name the uncertainties and gaps in their consciousness of themselves, their knowledge of content, teaching, and learning, and where there is a community of peers engaged in similar interrogation. Their own emergent subjectivity is viewed as a legitimate focus of study. The discursive practices and community that is constructed is highly significant. Through careful interventions on the part of the tutor, the student teacher can be guided to uncover their own

emerging consciousness of their subjectivity, the multifaceted meaning of a teaching incident, and the attendant responsibilities of the teacher in developing a responsive, inclusive practice. In addition, the portfolio provides a new model of professional engagement with problems of practice and the complexity of meaning-making.

TEACHER EDUCATION CONTEXT

The post-graduate diploma in education (PGDE) is a one-year post-graduate program in the Republic of Ireland (ROI) that certifies teachers to teach in second level schools. Most students have attained an honors degree and access to the course is competitive. The structuring of the PGDE includes studies in the foundations of education, professional studies that include microteaching, subject teaching methodologies, information and communications technology, and a teaching practice placement with a minimum of six teaching periods (dominantly 40-minute periods) per week over the course of the year in their chosen subject areas. Up until 1999 teacher education had not undergone any major review since the foundation of the state, despite intense curriculum reform at first and second level and societal change at all levels. A national review of teacher education (1999–2001) critiqued the theory-practice divide and called for a radical repositioning of practice as a central focus in teacher education and for more reflective learning environments (Byrne, 2002).

In the program described here there is an annual intake of approximately 220 students. Students will spend on average six hours a week in large lectures studying foundational studies, two hours in smaller student cohorts in subject methods classes, and a one hour weekly tutorial facilitated by their teaching practice supervisor, who also visits students in schools and assesses practice five to six times during the year. An overarching program goal is to develop reflective practitioners and the portfolio is the main structure designed to develop and assess this capacity.

THE PORTFOLIO PROJECT

The portfolio was introduced to this program in 2000, replacing a previous reflective journal. The goal of the portfolio was to develop reflec-

tive practice as a key capacity and to integrate theory, knowledge, and practice. A series of 6 to 12 lectures as well as weekly tutorial support, supervision visits and conferences, and biweekly microteaching classes are the main pedagogical supports for the portfolio. The portfolio consists of five different components.

The first component is a teaching statement that requires students to articulate their understanding of what it means to be a teacher and to map the development of that understanding over the course of the year. They also must create three portfolio entries that are selected by them to document significant learning and development of their teaching. Each entry consists of an abstract that clearly states the problem or issue to be addressed, a reflection of up to 1,500 words, and evidence of classroom enactments, research, and applications that are clearly explained and contextualized. Evidence can come in many forms, including class planning, reflective journal entries, supervision reports and feedback, reading, microteaching reports, supervision feedback, student work, and so on. The reflection must clearly integrate the meaning and interpretation of the writer and must justify and connect practice interventions and conclusions to theoretical readings and professional requirements. Finally, they must prepare a concluding statement that is designed to synthesize the learning documented in the portfolio and to articulate the implications of their growth for future practice. In the next section I briefly describe research methods and analysis.

METHODS AND DATA ANALYSIS

This data set is part of a larger longitudinal study conducted over a ten-year period that spans the introduction of a reflective journal in 1998 and then a reflective portfolio in 2000. The research method employed was narrative inquiry (Clandinin and Connelly, 2000), where the portfolio was tracked over time and space using diverse data collection methods including portfolio texts, reflective self-study notes, video-taped portfolio presentations, structured questionnaires, student reflections on learning activities, and multiple in-depth interviews. According to Bruner (2000) it is through narrative that a person constructs a version of themselves in the world and it is through the stories we tell ourselves and others that we define our agency and stance. For this chapter, I revisited and analyzed

questionnaires (N = 25) collected over time, notes from student portfolio presentations and video tapes (N = 5), portfolio texts (N = 35) from different cohorts, and portfolio process reflections written after the portfolio was completed that invited students to reflect on the impact of the portfolio (N = 12). In the analysis I looked for how change in perspectives of themselves as knowers and teachers was described, how they viewed teaching and its purpose, what they identified as important and significant learning, and how they negotiated moral issues in their teaching. Moral issues are viewed as integrally linked to a teacher's stance and how the teacher develops capacities to take responsibility for shaping inclusive learning cultures. In the next section I contextualize my research theoretically with reflective practice frameworks and describe how I came to own the portfolio as a tool for developing pedagogical strategies for reflective engagement with practice problems.

REFLECTIVE PRACTICE: A PROBLEMATIC TURN

In recent years there has been a critique about a lack of clarity and shared understanding in conceptualizing reflection and a critique of the lack of empirical evidence to support the widespread claims advocates make in terms of impacting on teaching practice and improving learning (Fendler, 2003; Lyons, 2002, 2006; Rodgers, 2002). Parker (1997) has argued that the cultural predominance of technical rationality has meant that reflection has been hijacked by a semantic sleight of hand so that any kind of thinking about one's practice is now described as reflection and all teaching becomes reflective (p. 30). Fendler (2003) maps the genealogy and historical nature of reflection and advocates that reflection itself is embedded in historical and discursive complexities that must be addressed in order to further the research agenda in this area. She reminds us that reflective practices can be used both to regulate and constrain professional practice as well as to serve emancipatory functions. Creating a learning environment that mentors the portfolio assignment can ensure that reflective activities are intellectually and emotionally meaningful to beginning teachers and lead to "reconceptualising one's image of self and other, genuine questioning of what is an ought to be, and re-imagining the relationship between authority and education" (Freidus, 1998, p. 51).

Fendler's (2003) vignette below on how a group of master level students in one of her courses satirized their preservice experience of reflective practice uncovers the experience of student teachers when the goals and purposes of reflective activities are not explicated sufficiently.

So, we have been discussing reflective teaching. How does this *feel*? How does this *inform* your teaching practice? Write a reflection about how it *feels* to learn about reflective teaching. Very good. Now, write a reflection about how it *feels* to write reflective journals. (p. 1, italics mine)

The satire illuminates a number of prevailing misconceptions about reflective practice that it is solely concerned with the subjective views of the self—one's opinions and feelings are the main curriculum for reflection. The focus is on "feelings" and then "feelings on feeling" with the implicit assumption that student teachers will make the requisite translations to practice.

The assumption that teachers are able to situate themselves reflectively without any pedagogical scaffolding or guidance is widespread in traditional programs that are additive models rather than programs with coherent and integrated visions, goals, and processes (Feimen-Nemser, 2001, Darling-Hammond, 2006). In the additive model, reflection is added on to the program but the mainframe course, content, and dominant discursive and pedagogical structures remain the same. This clearly does not create reflective teachers. Rather, the discourse community that is formed in a reflective learning environment is the basis for the formation of the professional dispositions and attitudes that lead to a more responsive, expansive, and inclusive practitioner (Freidus, 1998; O'Loughlin, 2009). Building and explicating conceptual and experiential connections between the key activities and tasks that we set for preservice teachers, such as portfolios or reflective logs or journals and learning to teach, is at the very heart of "developing a pedagogy of teacher education" and requires that teacher educators do their own reflective learning (Korthagen, 2001; Loughran, 2006; Lyons, 2006). Research points to the fact that in order to value reflection as a professional tool, students need to experience its value in shaping their "becoming" as teachers and help them become more capable, knowledgeable, and skillful teachers (Day, 1999).

A number of theorists have engaged with these questions and sought to develop conceptual clarity about the nature of reflection; Korthagen,

2001; LaBoskey, 2002; Lyons, 2006; Zeichner, 1999). Carol Rodgers (2002) explicates conception of reflective thinking and extrapolates four key characteristics. It is (1) systematic and rigorous, (2) done in community, (3) focused on the meaning-making of participants, and (4) requires attitudes of wholeheartedness, open-mindedness, directness, and responsiveness. These four criteria are central to how I conceptualize reflection since they foreground processes and engagement rather than technical skills.

A large body of work now exists documenting how reflectivity can be developed through mentored portfolio development. This has particularly focused on the use of portfolios as a scaffolding tool for both sponsoring and assessing reflective thinking and as a tool for adequately capturing the complexity of teaching (Craig, 2003; Freidus, 1998; Grant and Huebner, 1998; Lyons, 1998, 2002; Mansvelder-Longayroux, Beijarrd, and Verloop, 2007). As an assessment in context tool the portfolio can capture the situatedness of teaching and also display the nuances and dilemmas involved in teaching decisions and enactments (Clark and Rust, 2006; Lyons, 2006).

In the next section I briefly summarize some of the themes that are generated from my research. An overall theme of the portfolio as a journey and a space is described, which I interpret as marking the developmental and emotional nature of the portfolio for students. Students also describe key practices that surround the portfolio as a model in developing new practices as beginning teachers. I will then describe what models students bring to learning to teach, suggesting that the portfolio unearths unconscious commitments and teaching archetypes they explore in their portfolios allowing for their transformations. Finally, I look at how students depict changes in their teaching practices and relationship to their identities as teachers, presenting evidence that the portfolio gives students a space to “come to voice” in a new way.

THE PORTFOLIO: METAPHORS OF JOURNEYS AND SPACES

It was a space where I was meeting myself where I am both the subject and the researcher . . . the impact on me has been far greater than any

other academic experience. I now feel this should be an integral part of all learning (Student Reflection).

Students routinely resort to metaphors of journey and space to describe the impact of the portfolio process. I interpret the use of metaphor in general as suggesting that students are developing more complex ways of being in the world of teaching. According to Greene (1994) metaphor is

the center of language and the nature of imaginative thinking may be best illuminated by viewing it in terms of metaphor. Imagination after all, is the cognitive capacity that allows human beings to construct alternative modes of being, to look beyond the actual in their own experience, to envisage what might be if things were otherwise. (p. 456)

Greene argues for the centrality of agency and consciousness in learning and maintains that language allows us as human beings to imagine new worlds, agency, and practices.

A pedagogical (and research) strategy I use to make the portfolio lecture more learner centered is creating a space for the presentation of portfolios by recent graduates. The presentations serve as a reflective space for the presenter as well as providing a more authentic account for new students. It also serves as a research tool for me to understand the impact of the portfolio from the students' perspective. A constant theme in these presentations is their advice to the new cohort to start reflecting from the beginning of the year, and a common theme is their description of learning to teach as a journey with the portfolio as a space to chart this journey. Their biggest regret as they look back on the process is not documenting and reflecting on their teaching from the beginning. Although they remember being pressed to begin portfolio work from the beginning of the year by their tutors, they report that they resisted it as they did not understand the importance of this work until they were in the process of pulling the portfolio together at the end of the year. Thus, they were caught in the Meno paradox as presented above. A presenter describes the portfolio thus: "[It was like] a living manuscript where I was writing myself to myself. As I kept writing I learned to be comfortable with not knowing where it would end up, but I began to trust the process." In this instance the student demonstrates a sense of comfort with "not knowing" in the search for meaning. She describes how the portfolio initially made no sense to her as she was used to being given a book to read or some

theorist to research, but she implies that the portfolio gave her permission to legitimately focus on studying herself as an emerging teacher. She now sees the portfolio as her “book in progress” suggesting that the portfolio has authored a new sense of herself as knowledge maker.

Another student uses the metaphor of the portfolio functioning as a traffic junction—a space to make sense of all the traffic that makes up the teacher education program: “All these different bits of teaching and theory came together and I am in the middle trying to make sense of them and choosing the best direction to go in.” Now having completed the portfolio these students understand in a more embodied way why it was important to bring their questions, observations, and interpretations to the public domain of the lecture or tutorial space and to get feedback from peers and lecturers in a community of learners. The portfolio allows them to experience how knowledge of a topic grows and develops over time and how their interpretations and experimentation shape their understanding of that knowledge. Thus, they see knowledge production as an interpretative act and, as a result, are more cued to seek and listen to others’ interpretations of knowledge and the funds of knowledge that students bring to their classrooms, which has been identified as being crucial work in powerful teacher education (Darling-Hammond and Bransford, 2005).

The portfolio process has been for many of them the first time they have experienced the process of constructing meaning and knowledge out of experience. Their views on themselves, their students, their profession, and the source of knowledge have become much more tentative and complex. Here is how one student describes the process:

The portfolio acted like a valve system in that it allowed me to release all pressures and anxieties and find some rationale for them. Even if a conclusion was not immediately found, somewhere down the line another entry into the portfolio mapped onto it. It took me a while to realise that a portfolio is not an essay with a beginning, middle and end—it is dynamic and changing process. The portfolio develops in accordance with how you as an individual develop both on a personal front and as a teacher. (Portfolio Text)

The portfolio supports students to look back on their initial constructs and, thus, for the first time there is a consciousness of the stances they take and a sense of their growth in areas they would not have understood

without the portfolio. There is a new consciousness of what they bring to teaching and its significance.

Looking Back: Unearthing Teaching Archetypes

It's funny I never saw school as a place to learn stuff. The teacher's job was to present the class and to give you homework. Your job was to learn the presented material when you got home. I often think now of those students who were not like me, who were not motivated to learn it when they got home. I spent hours and hours learning stuff at home but I never saw school as a place to learn. Those students who were not motivated got left behind. (Student Reflection)

In this opening reflection the student teacher “never saw school as a place to learn stuff.” Many students report a similar experience of learning in secondary school. This student contrasts his own motivation to learn with those students who got “left behind” and questions the morality of this in his work as a teacher. His portfolio maps his stance to create a pedagogy that engages and motivates all students. The dominant transmission model is reflected in a drawing and reflective exercise I ask them to do on their ideal classroom at the beginning of each year. Approximately 90–95 percent of the 220 students draw classrooms where the teacher is at the top of the classroom and the students are sitting quietly in neat rows listening attentively. Teaching is dominantly constructed as teaching content or “telling,” and learning is listening to the teacher. The ideal classroom contains these essential components—ready, willing, and motivated students and a competent teacher who is able to break down the content material into 40-minute class bites. This teaching and learning archetype is the dominant design that student teachers bring to the program.

This raises key questions about the predominance of transmission-teaching models. If the epistemological position of students is predominantly that knowledge comes from authoritative sources, and they believe that a teacher's job is to teach knowledge that is already predetermined, then I can expect that the reflective portfolio task will be difficult and constructivist teaching methods will be consciously or unconsciously resisted. I suspect that for a lot of students we may be working at cross-purposes to each other. Becoming a reflective practitioner assumes that the student is comfortable with viewing knowledge as partial, uncertain,

context-dependent, and open to interrogation. However, if students have not been given opportunities to construct meaning, they have no experiential model or structure of how to engage with knowledge and practice in a reflective way. In addition, how can they create learner-centered environments if they have no experience of such environments? In the example below a student teacher vividly recounts memories of being a student in classrooms dominated by teacher talk, teacher control, and learning off “reams of [meaningless] material,” or as one student put it, being “hand-outed to death.” They often juxtapose these memories side by side with current reform views of constructivist teaching where they are encouraged to become curriculum designers and move away from textbook learning.

I was never given an opportunity to personalise my learning or understanding. Looking back I can remember learning off reams of material none of which I remember today. I remember asking one teacher how a formula for calculating interest was derived and her reply was: “You don’t have to know that, all you have to do is learn it.” (Student Reflection)

Learning, knowing, and teaching are disconnected activities. There is little personal investment or ownership of the learning process. Reflection in a discourse community provides a route for this archetype to become conscious and reframed into a more expansive model. In addition, introducing other learning models and theoretical frameworks can give students the language and tools to justify and construct new models. The following is a quote that summarizes how students initially framed teaching: “I brought to teaching what I had experienced. Looking back on the beginning of the year I largely saw the teacher as narrator. Basically I had a body of knowledge I wanted to communicate and once communicated I believed it was learnt.”

Below, Tim, a mature student, becomes aware of his unconscious commitment to transmission teaching. Even though this way “didn’t work” for him (he was expelled from school at 15), his reflections help him understand his initial resistance to the portfolio and to the constructivist teaching methods presented in the program. The portfolio facilitates him to create a new commitment to a stance that values learner-centered pedagogy. This stance is validated by his readings, lectures, and his own practice-based documentation of student learning.

I was ideologically committed to a way of teaching that I do not value and that didn't work for me when I was in school. I didn't even know that I was committed to this way. When constructivist pedagogies were introduced in class I totally resisted it and I thought the whole process was for the birds. This whole hands-on methodology was for primary kids not secondary kids I thought. I was not even aware that I was so ideologically committed to the kind of education I had experienced. It was unconscious. I thought it was the only way to do education. I now know that it is not what I want to do. So the portfolio process and all the reading, talking and experimentation with learner-centered methods and really listening to students has made me aware of the kind of teacher I want to be and that I value constructivist methodology now. (Interview Transcript)

In his portfolio Tim returns again and again to students who are deemed failures by the system and questions the value of routine practices such as streaming, expulsion, disrespectful conversations about students' intelligences, and so on. There is a clear political stance taken on these issues and a clear commitment to creating environments where students are reflecting and coming to name their own meaning-making. He uses a teaching for understanding methodology to justify his use of drama, role playing, and the development of learning logs in his history classroom. What are the epistemic shifts that facilitate this movement and how do students depict this in their portfolios and reflections? This is the focus of the next section.

Epistemic Shifts in Relation to Knowledge

I now began with what the student did know and not the opposite. I began to treat all knowledge as legitimate, although as teacher and historian, realising the varying degrees of legitimacy. All pupil knowledge is legitimate in the sense that it is the starting point from which existing knowledge can be challenged and built upon. (Student Reflection)

One of the key shifts student teachers identify is coming to know that knowledge is constructed and that knowledge of their students becomes a valued knowledge source. In the quote above the student makes distinctions between varying degrees of legitimacy and knowledge claims, a central disciplinary component of history teaching. Portfolio texts document how they have transformed their teaching practices to include spaces

for students' meaning-making. They, as teachers, understand that starting from students' meaning-making and interpretations are key entry points to constructing learning-centered environments:

The portfolio process provided a basis for dialogue between fellow teachers, students and friends. . . . Both in conversation and reflective writing I was a learner. This affected my teaching. I didn't spout off my knowledge any more. I allowed and encouraged students to elaborate on their questions, answers, and existing information and become inquirers themselves. (Student Reflection)

In the same way students report that their views of knowledge are becoming more complex, there is also a shift in how they view themselves as knowers. They are becoming more aware of their own reasoning and thinking processes:

After a while I became aware of the fact that I was actually thinking about what I was doing. This happened because I would suddenly find myself saying: "this would be good for my reflective portfolio." The portfolio forced me to think about my teaching and to question exactly what I was doing. The reflection process was by far the most difficult part of the process. . . . Because of reflection, I could no longer put my head in the sand and pretend that everything was okay. I had to look at myself and ask what I could do to change things. (Tom, Reflection)

In addition, keeping a portfolio underscores for students the importance of viewing themselves as primarily learners. This becomes a legitimate identity structure in being a teacher. This is a major shift as before teachers were viewed one dimensionally, that is, that the teacher must solely be a knower:

Keeping a portfolio fostered within me a conception of myself as learner. It also fostered my ability to be reflective and evaluative about what I learn as a teacher, about what my students learn from my practices. Keeping a portfolio allowed me to document the evidence of my learning and development. It also enabled me to document my teaching philosophy. (Jean, Reflection)

Both Tom and Jean write about their shifting views of themselves as knowers and learners. There is a growing sense of confidence, ownership,

and consciousness in shaping this learning process. A number of key skills are being learned, including skills of self-evaluation, documenting practice, and consciousness of what one is doing. There is also a sense of taking ownership of their learning as novice teachers. Tom here acknowledges how reflection forces him to look outward and to acknowledge the gaps in his teaching and take a stance. The portfolio, because it was required, forced him to engage in this process. He did not come to it wholeheartedly initially, nor did he start with the assumption that he was responsible for his actions as a teacher. How many teachers do not have the confidence to acknowledge gaps and to experiment with solutions? How many teachers do not have consciousness-raising spaces or space to question hegemonic and disempowering learning structures that run counter to their own beliefs and values?

Shifts in Teaching and Learning Stances: A New Morality?

I realize now that I could write a completely different portfolio with the same material because I am still thinking about it and still reflecting on what I learned. The portfolio is never finished. . . . The throughlines in my portfolio are in my life. The way you teach is the way you are. I have learned from reflection that what they are saying in lectures is relevant and can be used and should be used. I have learned about relationships and truly caring. Caring is a two way street. . . . I did teach in the U.S. and I acted like I cared and I knew that caring was important. But now I realize that really caring is important. It is not just a performance. Now it is part of who I am. I also used to think that relationship was just between teacher to student. I now think that it's teacher to student, student to teacher, teacher to other teachers, teacher to parents, student to other students. All of those relationships are necessary and important and impact on your teaching. (Miriam, interview transcript)

Miriam's statement above suggests that the reflective process on her teaching continues into her life and her view of herself as a professional two years after she graduated from the program. Miriam has presented her portfolio for two consecutive years to each new cohort of students. Each time there are new meanings, new threads of understanding, and a deepening of her commitment to developing her practice as a teacher. In the above statement she acknowledges that her views of caring and relationships

have substantively changed through the reflective process and through her engagement with a practice-situated problem of poorly motivated students. Her inquiry highlights for her how students can be caught in a web of relationships that greatly impact their capacity to learn. In the same way her capacity to teach well is impacted by the relationships in her life and the meaning of those relationships.

Her reading of Nel Noddings on an “ethic of care” helps her to name and justify her decisions, and this leads her back to key relationships in her life that have impacted on her and shaped her stance. Miriam makes a distinction between caring as a performance and “really caring.” “Really caring” suggests a more embodied knowing that comes from a commitment and value that is deeply held. It is forged in her decision to take a classroom-based problem outside to a larger discussion with parents, other teachers, and peers. This enlarged discussion changes her relationship to and understanding of the problem. Caring now is not just a routine or performance coming from the inherited wisdom of the profession but is a deeply held practice that Miriam knows the value and meaning of and anchors her teaching and sense of herself as a professional. It weaves through her life and connects her to her grandfather who was a teacher and gave her the maxim of becoming a teacher who you would want for “your own kids.” Years after he gave her this motto she now unearths its true meaning for her practice and stance as a teacher. It suggests a different kind of knowing that is embodied and valued in practice.

In the example below Anna, another graduate, reflects on the portfolio. She underscores the incremental nature of the change in her practice and that it takes a long time before things register.

Having to reflect on my teaching practice this year has forced me to look at what I do as a teacher and why I do it! By reflecting I was able to build up my own confidence and tell myself that I was more than capable of teaching these students. I never thought I could teach and it was all because of a lack of confidence in my own abilities as a learner. Through the reflective process I was able to understand these feelings and build up my confidence. Professionally the reflective process has made me recognise how I have changed this year. If I did not have to reflect then I would not know how I had improved professionally and therefore my confidence would have remained low in the area of my own abilities. It takes a lot of reflecting on one’s self before things begin to register. Each week after I do my weekly

appraisals I learn something new about myself. I also learn a lot about the techniques I use to teach my class. I am getting better at opening up new topics and indulging in class discussion rather than just launching into the aims and objectives of the class. . . . This is a far cry from the teacher who came in at the beginning of the year and went straight into the detail rather than warming the students up. I suppose I've realised that a class can be almost like exercise; you have to warm up first before you can start jogging around the place and playing the game, otherwise you won't be able to play properly at all! (Anna)

Thus, the portfolio serves as a space to track professional development and in this way builds confidence and competence in how Anna sees herself as a developing teacher. She uses the metaphor of teaching and learning as "playing a game." Her job is to provide the workup for students to participate in this game—"warming up, jogging and then playing the game."

In the example below another student, Kate, describes how she now tries to develop a reflective learning environment in her class. Her experience of learning reflectively has deepened in her a commitment to provide opportunities for her students to learn in this way. She gives out assessment sheets to students on a regular basis and asks them to reflect on what they are learning:

Reflection has a huge role in learning. I have developed an arena where students are the creators of their own knowledge and this gives them a sense of ownership. I try to open up the classroom for inquiry and allow the students to openly discuss a new topic and talk about their own experiences. I believe that everyone knows something and we all have some knowledge base so it is just a matter of drawing out what the students know and expanding or developing this into more understanding of the topic.

So if a student says he does not know, when asked a question, I do not think this is acceptable as they do know something and that something is always relative in some way to the topic. So by changing the questions around, it will help the student to reflect on the topic at hand. In this way, the student will become more aware of his/her knowledge and therefore build up their self esteem to become a more confident learner. (Kate)

In this instance, Kate frames her students as knowers and her job as drawing out their knowledge. New teaching imperatives mark her practice

where she wants students to be “creators of their own knowledge,” giving them a sense of “ownership.” A new belief that everybody “knows something” and it is just a matter of “drawing out” and “expanding or developing this into more understanding” reminds one of Belenky and colleagues’ (1986) concept of the midwife teacher:

Like Freire’s partner teachers, midwife teachers assist in the emergence of consciousness. They encourage the students to speak in their own active voices. . . . Midwife teachers focus not on their own knowledge but on the student’s knowledge . . . help the student deliver their words to the world, and they use their own knowledge to put the students into conversation with other voices—past and present—in the culture. (Belenky et al., 1986, pp. 218–19)

In the examples of Kate, Anna, Tim, and Miriam above, there is a new moral imperative emerging that makes these novice teachers very aware of their moral responsibilities as teachers: there are new commitments to create inclusive classroom environments where students’ knowledge is honored and is brought to life in the interactions and activities they design. They name their commitments to new stances of inquiry, meaning-making, and a view of knowledge not as a commodity to be passed on but as a tool toward understanding. Knowledge and understanding are viewed as something that is incrementally built from the kinds of experiences that students can take ownership of and make personally meaningful. In so doing they are developing professional identities that include a sense of agency and consciousness. Instead of stepping into a static predetermined role of *teacher* as *knower*, they see themselves as building a role that will be constructed over commitments of time and energy to develop their practice as learners.

CONCLUSION

In this chapter I have presented evidence from students’ perspectives that the mentored portfolio experience can be a powerful intervention in unearthing and transforming teaching archetypes that run counter to current reform-oriented views of teaching where teachers are required to be knowledge makers and life-long learners. I have argued that the portfolio

can become a space where student teachers can “come to voice” in new ways and experience learning that is personally motivating and meaningful. This in turn leads them to view their classrooms as places where they have permission to experiment, research, and be legitimate learners (Feiman-Nemser, 2001). It engages them with the complexities involved in work with diverse students and caring about the consequences of their actions on students’ life chances.

Becoming responsible and conscious agents of change is, I believe, a moral stance and leads to a new morality of responsibility and caring for the needs of themselves and the needs of their students as learners. This echoes Noddings’s 1992 challenge to make schools caring places. Caring, according to Noddings, is an essential part of a moral education, and she challenges schools to give students practice in such caring: “If we want to produce people who will care for another, then it makes sense to give students practice in caring and reflection on that practice” (p. 191). The first place to start is creating spaces where students’ interests and goals are “cared about” and given legitimacy in educational work: classrooms are “places in which students can legitimately act on a rich variety of purposes, in which wonder and curiosity are alive, in which students and teachers live together and grow” (p. 12).

The portfolio, in its invitation to students to choose issues or concerns that emanated from their practice work, provides a space for student teachers’ concerns to become a legitimate focus. The portfolio also provides them with a space to look back on their own experience as learners, thus allowing them to name the discontinuities between what they are being exhorted to do in their own teaching practice in the teacher education program, namely, constructivist teaching and their experience as learners in second level schools and universities that is dominated by transmission teaching.

Learners cannot be exhorted, coerced, or told to value educational practices that they have not experienced and come to value through their own lived experience and effort. In the portfolio project learners become reflective practitioners through various reflective activities engaged in constructing a portfolio, including a discourse community that listened with care to their concerns and created a legitimate space for their engagement. As Kuhn (2005) argues, understanding the value of how one comes to make informed choices between conflicting discourses is a necessary

prerequisite to valuing and expending the kind of intellectual endeavor and effort it entails.

Perhaps one reason school practices stay so similar from one reform effort to another is the fact that not enough attention is paid to the personal investments and epistemologies that learners bring to learning. One cannot change something one is not even conscious of having. As Tim reflects above, it is only when he becomes conscious of his unconscious ideological commitments to a particular position regarding teaching and learning that he is able to invest the intellectual and emotional investment in adapting practices.

And we are back to where I started with the Meno paradox! I have argued that the reflective portfolio has the potential to challenge students' epistemological positions, if students are provided with the kinds of environments that midwife their ideas and thinking, and lead them to engage in interrogating the multifaceted variables in any teaching-learning encounter. Opening this up makes visible the construction of knowledge and also illuminates the kinds of commitments and stances they have unconsciously internalized from their school experience. Furthermore, and most important, there is a naming of experiential situated knowledge that brings to life the complexity and different points of view in any encounter. Standing on this ground they are much better equipped to converse with the meta narratives of educational discourse and less likely to become subject to them.

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Afterword

Authors who have written for this special publication on teacher reflectivity should be commended for their efforts and attempts to answer the many questions surrounding the concept of teacher reflectivity. Although the goal was not to provide an exhaustive completion of answers to issues surrounding teacher reflectivity, authors have provided valuable insights to many unanswered questions as they related to the five sections of teacher reflectivity: (1) in theory and research, (2) in teacher education programs, (3) with teacher candidates, (4) in schools and classrooms, and (5) from international perspectives.

Starting off this book, Jason Jude Smith, Diane Yendol-Hoppey, and Rejoyce Soukup Milam provided us with research that described how participating in teacher research enhances prospective reflectivity, cultivates an inquiry stance, creates a shift to focus on student learning, and enhances novice teachers' understanding of their professional responsibilities. Linda Quinn, Edward Pultorak, Martha Young, and Jane McCarthy furthered the dialogue by defining reflectivity as it relates to teachers as decision makers and problem solvers. They concluded that teacher educators must be mindful of the need to reinvent teacher education programs that provide increased opportunities for teacher education candidates and teachers to develop knowledge of the purposes of reflectivity and skill in reflective practices.

The impact of reflection as a social problem-solving process was addressed in the third chapter. Sunya Collier, as part of her research, proposed

that the social nature of reflective thought is especially constructive in the development of teachers who can consider why they make specific instructional choices and how that is related to learning. Next, Melissa Mosley, James Hoffman, Audra Roach, and Katie Russell advanced our understanding of the nature of reflection in their research of a preservice teacher literacy practicum. In investigating “reflective connections” and “visioning,” they concluded that sources of influence on tutoring, such as course readings, both allowed and constrained opportunities for analytic work on the part of the preservice teacher.

Authors of the fifth chapter, Leah Herner-Patnode, Hea-Jin Lee, and Dean Cristol, provided insights into their research regarding reflectivity and preservice teachers’ dispositions. Study results indicated significant gain in two of the four areas, implying that reflection has an impact on the development of dispositions. Then, Christie McIntyre and John McIntyre offered research findings regarding the quality of the reflections contained within teacher education portfolios. Findings revealed strong potential for portfolios to promote reflective thinking with teacher candidates. This was especially true of portfolios linked to state and national standards.

Barbara Larrivee, in chapter 7, discussed the challenges teacher educators face in attempting to facilitate the development of reflective practitioners as well as research-based learning task structures and other vehicles conducive to promoting reflection. Then, Walter Polka provided an historical review of differentiation and the individualization of instruction in relationship to cultural experiences and reflection. Study results were analyzed in terms of purposive teacher reflections to improve instruction and as a model to facilitate progressive transitions from teacher-centered instruction to student-centered learning.

In chapter 9, authors Nancy Gallavan and Angela Webster-Smith purported that teacher reflectivity needs to be deconstructed and analyzed in ways that are comprehensively organized, systematically constructive, and developmentally appropriate. They provided a self-assessment model to help teacher educators implement reflectivity in meaningful and productive ways. Rachel Wlodarsky, in her chapter, added to the dialogue by discussing the value, origin, and tools necessary to facilitate effective reflection.

How to examine teachers’ development through critical reflection was addressed in the chapter 11 by Rebecca Fox and Stephen White. Study re-

sults demonstrated how reflection data can be used to document teachers' understanding of program-learning outcomes and examine the knowledge and skills teachers learned during program coursework. Edward Pultorak and Martha Young provided suggestions for educational leaders (such as school administrators) to help foster reflectivity as they support beginning teachers in their chapter. They identified four stages of reflection (Reflective Person, Technical Rationality and Reflective Technician, Practical Action, and Critical Reflection and Reflective Citizen) and concluded that educational leaders should be provided professional preparation in the dynamics of teacher reflection and how schools can be more reflective environments.

Nancy Fichtman Dana and Diane Yendol-Hoppey provided information on sustaining and enhancing reflection throughout the teaching career in chapter 13. They provided three key mechanisms that promote deeper levels of reflectivity including: (1) creating conversational and psychic space; (2) returning the gaze to the familiar and unfamiliar; and (3) pushing beyond what is known. In the next chapter, Donna Foss shared research regarding using journaling to close the gap between a vision of reform and teaching practice. Among other items, she concluded that reflectivity helped teachers transform their knowledge of how middle-level students learn, understand the effectiveness of teaching mathematical concepts instead of learning rules, and know how to provide active lessons that involve exploration instead of teacher lectures. Chapter 15 provided research-based information on how professional teaching standards developed by the National Board for Professional Teaching Standards can serve as a framework for guiding systematic reflection on teaching practice. Authors Mistilina Sato, Ruth Chung Wei, Eric Greenwald, Sandra Dean, and Kelly Vaughn also showed, in the absence of such guidance, development of practice can be delayed.

The final three chapters provided an international perspective to the discussion of teacher reflectivity. The work of Jian Wang and Lynn Paine reported the results of reflective lesson-based discussion and learning to teach among Chinese teachers. Investigating three cases, this study found that the three lesson-based discussions shared similar foci on teaching, subject content, and student learning and their interrelationship challenged the assumed relationship between the contrived curriculum system and the effects of teachers' lesson-based discussion on their knowledge

development. Next, the Netherland's Fred Korthagen discussed what teacher reflection is and what it does from an international perspective. He reported on a longitudinal study that showed long-term effects on the quality of graduates' interpersonal relationships with students, adequacy of perception of these relationships, and job satisfaction. Differences in outcome, however, were related to learning orientations. Finally, Ireland's Anne Rath explored how a mentored portfolio process in a secondary teacher education program impacted preservice teachers' perspectives on knowledge construction, teaching, and learning. She concluded that reflection is crucial if we wish our teachers to be equipped with the knowledge, skills, and dispositions that are required for twenty-first century schools.

The hope of the ATE National Commission on Teacher Reflectivity is that this monograph has presented a detailed review of the literature related to teacher reflectivity, summarized theory and research informing and supporting teacher reflectivity in various educational contexts, and offered a range of practices found across the United States as well as internationally. At this point, the commission is optimistic that this book substantiates the knowledge, skills, and dispositions that have been used to establish teacher reflectivity as a foundation of teacher education and advances the acquisition, application, and appreciation of teacher reflectivity as a critical aspect of professional growth and development. As mentioned previously, readers are encouraged to replicate studies, formulate and research additional questions, collect important data, and share results with other professionals and policy makers.

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About the Contributors

About the Editor

Edward G. Pultorak, PhD, is currently on faculty in the Department of Curriculum and Instruction at Southern Illinois University, Carbondale. He has authored more than 55 publications, including articles in *Kappan*, *Journal of Teacher Education*, and *Action in Teacher Education*, and he currently serves as co-editor for *Critical Issues in Teacher Education*. His research area is teacher education.

About the Contributors

Sunya T. Collier, PhD, is a former assistant professor of Early Childhood Education at Georgia State University. The role of reflection is central to her research in teacher development. Publication topics also include the importance of individual and global perspective in education, the promotion of teacher research, and program development.

Dean Cristol is an associate professor and academic coordinator of Educational Programs on the Ohio State University, Lima. His research foci are university-school partnerships, professional development, and utilizing instructional technology in social studies classrooms. Embedded in his work is an emphasis in mentoring practices at the university and PreK–12 level.

Nancy Fichtman Dana is a professor in the School of Teaching and Learning and director of the Center for School Improvement at the University of Florida. She has published four books and numerous articles focused on reflection and the particular ways reflection plays out in the process of practitioner research.

Sandy Dean is the director of the National Board Resource Center at Stanford University, where she runs a support program for candidates for National Board Certification, works with candidate cohorts in San Francisco Bay Area schools, and coordinates the Accomplished California Teachers Network, an advocacy group advancing teacher leadership.

Donna H. Foss, EdD, professor in the Department of Mathematics at the University of Central Arkansas, is interested in developing pedagogies that affect the instructional strategies adopted by K–8 teachers and teacher candidates. Her research centers on teachers' conceptions of mathematics teaching and learning and their influence on instructional behavior.

Rebecca Fox teaches graduate courses in second language acquisition, culture, and world language education. Her areas of research and publication include foreign–world language education, teacher development, and portfolios and reflection in teacher education. She serves as current chair for the Portfolios and Reflection SIG of AERA and received an Excellence in Teaching Award from the Modern Languages Department at George Mason University.

Nancy P. Gallavan, PhD, professor of Teacher Education; Teaching Learning & Technology, University of Central Arkansas, specializes in classroom assessment in the MAT Program. Active in AERA, ATE, NAME, and NCSS, Nancy has authored 60+ publications including *Performance-Based Assessments* and *Navigating Cultural Competence* (for Grades K–5 and 6–12) with Corwin Press.

Eric Greenwald is a doctoral candidate at Stanford University. His current research explores the relationship between formative assessment practices and teacher learning. At Stanford he has assisted in the teaching of courses on social learning theories and adolescent development. Prior

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Leah Herner-Patnode is an assistant professor of Special Education at the Ohio State University, Lima. Her research interests include students with special needs in the general education classroom, as well as training teachers to think reflectively and succeed in teaching in diverse classroom settings.

James V. Hoffman, PhD, is professor of Language and Literacy Studies at the University of Texas at Austin. He is past president of the National Reading Conference and the former editor of the *Reading Research Quarterly*. Dr. Hoffman's research interests are focused on teacher education and the qualities of texts that support literacy learning.

Fred Korthagen is a professor of education at Utrecht University, the Netherlands. His primary field of interest is the professional development of teachers and teacher educators. Twice he received the Exemplary Research in Teaching and Teacher Education Award from the AERA Division Teaching and Teacher Education. In 2009 he received the Distinguished Research Award from the ATE.

Barbara Larrivee is a professor in the Department of Language, Literacy, and Culture at California State University. Her research focuses on developing reflective practice and creating learning communities based on respectful and authentic dialogue. Her latest books include *Authentic Classroom Management: Creating a Learning Community and Building Reflective Practice* and *An Educator's Guide to Teacher Reflection*.

Hea-Jin Lee is an associate professor of Mathematics Education at the Ohio State University, Lima. Her research interests include improving reflective thinking and practice, assessing professional growth, designing teacher needs-based professional development program, and teaching mathematics to children at various levels.

Jane McCarthy is a professor in the Department of Curriculum and Instruction in the College of Education, University of Nevada, Las Vegas.

Dr. McCarthy is a former dean of the college and serves as the director of the Accelerated Schools Project. She is a director of the newly formed World Federation of Teacher Educators.

Christie McIntyre is an assistant professor in the Department of Curriculum and Instruction at Southern Illinois University, Carbondale. She earned her PhD from Georgia State University with a major in Early Childhood Education. Her research includes assessment in primary classrooms as well as in teacher education programs.

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Rejoyce Soukup Milam is pursuing an EdD in West Virginia University's Curriculum and Instruction program. Her research interests include the role of teacher development in transitioning societies and effective intercultural teacher preparation.

Melissa Mosley, PhD is an assistant professor of Language and Literacy at the University of Texas at Austin. She draws on critical discourse analysis and ethnographic methods to study how preservice teachers construct critical literacy—culturally responsive practices. With colleagues, she authored *Designing Socially Just Learning Communities: Critical Literacy Education Across the Lifespan*.

Lynn W. Paine is a professor of teacher education at the Department of Teacher Education, Michigan State University. Her research interests and publications focus on the relationship between educational policy and practice, between education and social change, and issues of inequality and diversity from sociological, comparative, and international perspectives.

Walter S. Polka is an associate professor in the department of Educational Administration and Counseling at Niagara University in New York. He has been an educator (teacher, administrator, superintendent,

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Linda F. Quinn is a professor of teacher education in the department of Curriculum and Instruction of University of Nevada, Las Vegas. Dr. Quinn recently co-authored a book, *The Joy of Teaching: Making a Difference in Student Learning*. She is currently engaged in developing distance education course work for a MEd in Curriculum and Instruction education.

Anne Rath, EdD, is a teacher educator from Ireland. Her main research focus is on how to create the kind of learning environments where people can grow and develop to their full potential. To this end she has spent the last ten years developing a reflective learning curriculum for preservice teachers. Her research includes such diverse areas as teaching from a social justice framework, critical reflective learning environments, development education, and teaching for transformation. She has a doctorate from Harvard University and currently teaches courses at PhD, masters, and post-graduate level.

Audra K. Roach is a doctoral student at the University of Texas at Austin in the department of Curriculum and Instruction. Her experiences as an educator include developing literacy programs with underserved populations and teaching in a second-third grade multi-age classroom. Audra's current research interests include understanding how reflective writing in an online, dialogic environment supports preservice teacher education.

Katie W. Russell is currently a doctoral student at the University of Texas at Austin in the department of Curriculum and Instruction. Katie is a former elementary teacher and director of education at San Antonio Children's Museum and has also worked as a teacher educator at Trinity University. She is interested in critical literacy and preservice teacher education.

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C. Stephen White teaches graduate courses in early childhood and literacy education. His research and publication focus on young children's

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Diane Yendol-Hoppey is a professor of Education and director of the Benedum Collaborative at West Virginia University. Diane's research focuses on job-embedded teacher professional development and teacher leadership and specifically explores how powerful vehicles for teacher professional development including teacher inquiry, professional learning communities, and coaching-mentoring can support school improvement.

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