Developing Understanding of Research-based Pedagogy with Preservice Teachers: An Instrumental Case Study

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Abstract

Preservice teachers have difficulty incorporating research-based instructional strategies and often revert to those observed during their own school years. This study describes how preservice teachers used a framework of planning, implementation, feedback, and reflection to try research-based teaching practices from their methods courses and examine their notions of effective pedagogy. This instrumental case study of 50 preservice teachers in a two-day-per-week field experience includes intensive interviews of six selected students. Findings include kinds of support reported as helpful in implementing new instructional strategies, difficulties experienced in the implementation of strategies, and new understandings of effective teaching during use of the framework. Participants used the framework to identify and examine preconceived notions of effective pedagogy, but also revealed some unplanned learnings.

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Introduction

New teachers often report discord between what they learned in college education courses and the *real world* of the classroom (Clift & Brady, 2005; Zeichner & Tabachnick, 1981). Surveys of recent graduates of our programs confirm that many new teachers are still failing to make connections between theory and practice. The elementary education program in our large urban university schedules a series of field experiences concurrent with methods courses to facilitate students' integration of theory and practice. Partnership schools work with the College of Education to provide experienced mentoring for teacher candidates. Additionally, faculty members work with teacher candidates in the schools to make connections among theory, research, and practice. For all of these efforts there are still areas that need attention. Not all of the courses that focus on pedagogy are directly connected to these field experiences, and a substantial number of students in our college are either part time or opting for alternative schedules, such as online, evening, or weekend courses. Although students often enter our field experiences with prerequisite methods courses completed, they have few opportunities to interrogate their beliefs and understandings about effective teaching or possess the means to implement research-based methods taught in those courses.

Teacher educators often wonder why preservice teachers fail to implement instructional strategies that research indicates are effective and instead, revert to teaching strategies they saw used by their teachers during their own experiences as K-12 students. Lortie (2002) indicates that preservice teachers often have durable beliefs about what is effective in education based on the "apprenticeship of observation" (p. 55), that is, students come into their teacher preparation courses with many years of observation of the educational enterprise in the role of students and have formed notions of good teaching based on what they saw and experienced as students. Mayher (1990) calls it "educational common sense" (p. 275), which has more to do with internalization of intuitions than with rational sense. Often these persistent beliefs are contrary to what is known about exemplary teaching practice, and researchers, such as Mayher and Lortie raise the issue of how to change beliefs about practice that are deeply embedded, are longstanding, have structured the perceptions and expectations of the preservice teachers.

Problem

The problem presented in this study centers on preservice teachers who have difficulty incorporating exemplary instructional practices. Although preservice teachers may be resistant to new ideas about teaching for a variety of reasons, Grossman (1991), John (1996), and Lortie (2002) speculate that their years of informal and silent observations of teaching during their own school experiences influence how they view methods and field experiences in preservice preparation. When new information contradicts their pre-existing understandings of effective pedagogy, students do not necessarily modify their beliefs. The resulting conflict may make them reluctant to implement new teaching strategies, especially if they anticipate that the strategies might not be successful (Richardson, 1996). In our work with preservice teachers, we saw the need to encourage and support the preservice teachers as they investigated research-based teaching strategies.

Purpose

In order to support our preservice teachers in their attempts to implement research-based instructional strategies, we developed a framework of planning, implementation, feedback, and reflection to encourage preservice teachers to examine unfamiliar strategies from their university courses that they had not previously had an opportunity to try. The purpose of this instrumental case study is to describe how preservice teachers used this framework to try research-based teaching practices from their methods courses and examine their notions of effective pedagogy during a field experience. Our research was guided by two questions:

1. What beliefs and understandings about the effectiveness of instructional strategies do preservice teachers develop when using a framework for investigating pedagogy during a field experience in elementary schools?
2. According to preservice teachers, what influences the development of beliefs regarding the effectiveness of instructional strategies?

Literature Review

Research (Armstrong, 2007; Borko & Putnam, 1996; Marks, 2007) suggests preexisting beliefs impact learning. Merriam (2004) states that values, beliefs, and assumptions are a lens through which we view and make sense of our personal experiences. University students often find that new information presented in university courses is in conflict with their existing beliefs or understandings. When new information and preconceived beliefs are out of sync, students may not fully process the new ideas, may not attend to them, or may simply reject them (McFalls & Cobb-Roberts, 2001). Rokeach (1968) and, later, Richardson (1996) emphasized the connection between beliefs and action. Simply stated, teachers may try out new practices they believe will work, but are unlikely to engage in instructional practices they do not believe will be successful. Students' willingness to try out new ideas may be further confounded by their failure to thoroughly process the new information and by the resulting perseverance of unexamined beliefs about teaching (Richardson). This may explain the seeming durability of beliefs formed during the apprenticeship of observation they experienced as K-12 students.

Preservice teachers have other concerns that may also present barriers to their incorporating new learning into their understanding of exemplary practice. They are in the process of defining themselves as teachers and are primarily concerned with survival. They are developing automaticity in the routines of classroom organization and behavior management and learning the fundamentals of planning (Tauer & Tate, 1998). Because preservice teachers are novices, they may not have the inclination or competence to reach beyond these basic concerns without assistance.

Our review of the literature indicated that preservice teachers may be reluctant to implement new instructional strategies because of a preoccupation with basic survival skills for the novice teachers and also because of a conflict between pre-exisiting beliefs about effective pedagogy and new research-based practices. In order to support the preservice teacher in overcoming these hindrances, we created a framework to support them in planning and practice. Our review also revealed that reflection is an important part of the learning process. Mezirow (1981, 2000) identified reflection as a major component in the processes that bring about a higher level of cognitive development. Mezirow (2000) asserts that there are two components required for the development of more advanced explanations of our experiences: critical reflection and rational/reflective discourse. One must be able to examine alternatives and also engage in discourse supported by a more experienced mentor. Experience alone is not sufficient to move the individual toward more advanced understandings. Ferry and Ross-Gordon (1998) found that experience without reflection reinforced pre-existing, less developed interpretations of learning models. We, therefore, incorporated opportunities for feedback and reflection into the framework that we called lesson strategy investigations, and it is the reflection component that we anticipated would be helpful to the preservice teachers in developing new understandings of research-based pedagogy.

The following sections describe our roles as researchers, the procedures we followed, and the findings of the investigation.

Role of the Researchers

Regular faculty and graduate teaching assistants in the elementary education program at our university are assigned as supervisors of students in field experiences and full-time internships. The first author is an associate professor at the university where the study was conducted and regularly supervises preservice teachers during their field experiences. The second author was, at the time of the study, a third year doctoral student in the final semester of coursework and had previously supervised field experiences as part of her responsibilities as a graduate teaching assistant. The following describes our researcher assumptions.

A qualitative research design grounded our study. This research design enabled us to answer our specific research questions and to identify questions that require further exploration (Creswell, 1998). Additionally, the use of a qualitative research design supports several assumptions that together define our paradigm.

The first assumption to which we subscribe is that realities are constructed by the individuals who encounter the situation, circumstance, or phenomenon. Based on our ontological assumption, we used quotations and themes in participants' own words and provided evidence of participants' varied perspectives. We understand that because knowledge is constructed, individuals often attach different meanings to the same phenomenon (Denzin & Lincoln, 2005).

We identified our epistemological perspective during the initial phase of this study. Doing so helped us to understand that as course instructors, there was limited distance between ourselves and our study participants. The distance lessened because we collaborated with study participants and spent time with them in the field as they engaged in their lesson strategy investigations. We had become insiders based on the very nature of our roles as university supervisors for this field experience. Separating ourselves from our study participants proved both impossible and impractical. We could not separate our classroom teacher selves, our university instructor selves, our internship supervisor selves, or our researcher selves. Thus, we could not observe, interview, or reflect without our many selves impacting observations, conversations, interviews, reflections, or interpretations (Creswell, 1998; Denzin & Lincoln, 2005).

The paradigm to which we subscribe also influenced our methodological assumption. As constructivist researchers, we sought to understand the ways preservice teachers develop beliefs about effective teaching, the ways they use a framework of lesson investigations to support reflection on their teaching, lessons learned as a result of the investigations, and general implications for future teacher candidates in an early field experience. We collected rich, thick data as described by Denzin and Lincoln (2005) and Creswell (1998) that describe teacher candidates' initial cognitive dissonance and progressive belief development.

As a professor and doctoral student research team, we identify ourselves as researchers who subscribe to the naturalist or constructivist paradigm (Denzin & Lincoln, 2005; Guba & Lincoln, 2005). We allowed our study participants' stories to flow and their voices to be heard, moving from the initial uncertainties the preservice teachers felt in their specific encounters with the lesson strategy investigations to their final reflections and lessons learned.

Method

Instrumental Case Study Design

Our study is an instrumental case study involving a group of individuals who experienced a phenomenon. According to Stake (2005), an instrumental case study allows researchers to gain an insider's view of an issue or concern. We selected the instrumental case study design because we sought to investigate how preservice teachers used a framework of planning, implementation, feedback, and reflection to try teaching practices from their methods courses and to examine their notions of effective pedagogy.

Participants

Students enter our elementary education initial certification program as first semester juniors and have completed their general distribution courses. During the final two years of their programs, the preservice teachers take a series of methods courses and field experiences. Preservice teachers in our program register for a two day per week field experience, a total of 26 days over the 15 week semester. There are four cohorts each semester in the field experience, and the internship coordinator schedules each cohort in two schools. Students register for particular cohorts based on course schedules and space availability. Our students had previously completed a one day per week field experience (14 days), and most had also taken courses that required some individual work with children, such as tutoring for a reading methods course. During the second field experience the preservice teachers are paired with experienced K-6 teachers. Our school district also requires mentor teachers to complete an in-service workshop that includes conferencing and observation techniques.

Study participants were in two of the cohorts of preservice teachers participating in the second of three internships of their elementary initial teacher certification program. The study was explained to all members of the cohorts, and they were given the opportunity to participate in the study. Of the 54 students in the two cohorts, 50 agreed to participate. Those who declined were not excused from assignments that later became part of our data, but their documents were not included in the data sets that were analyzed. These procedures were approved by the Institutional Review Board (IRB) of our institution.

We also conducted a series of interviews with six of the students. Following Onwuegbuzie and Leech's (2005b) suggestion, we engaged in a series of decision-making sessions regarding how many preservice teachers to interview and how to select them for participation in this study. A criterion sampling scheme was used to select students for the interviews. The criterion sampling scheme (Onwuegbuzie & Leech) is a process whereby the researchers select study participants because they meet one or more criteria. For this research study, we were interested in talking with students who could effectively articulate issues and concerns and who had completed their first field experience (a one day per week placement in classrooms with beginning attempts instructing individual students and small groups) in several different schools. We wanted students who would make a good effort at trying teaching strategies they judged to be challenging. Therefore, we eliminated from consideration for the interviews preservice

teachers whose evaluations from the first field experience indicated areas of concern or remediation that needed to be addressed during this second placement. Using these criteria, we selected six preservice teachers for the interviews. We explain our sampling decisions in an effort to ensure this qualitative research report is public and transparent as Constas (1992) recommends.

Procedures

At the beginning of the semester before entering the schools, the preservice teachers attended a full-day workshop that was a general orientation to the requirements of the field experience. The remainder of the workshop time was used in activities that enabled them to identify specific methods and instructional strategies from their various methods courses they wished to investigate. We encouraged them to think back to their courses and asked what strategies were discussed, examined, modeled, and/or practiced in those classes and then identify which seemed to go against their own prior experiences in schools and concluded, "I don't believe that will work" or, "That sounds good, but I don't understand how it works." Using the threaded discussion feature of Blackboard™, the university's electronic course manager, preservice teachers told each other about the strategies they were questioning and why. The preservice teachers' threaded discussion became our first data set.

The preservice teachers began their field experience in the schools during the seeond week of the semester. They were paired with experienced teachers, that is, experienced with both teaching and with mentoring teacher candidates. We, the authors, worked in the schools with the preservice teachers each day they were in the schools. Each of us was assigned by the university as the course instructor for one of the cohort field experiences. Additionally, they attended a weekly seminar connected to the field experience and conducted by their respective course instructor. Seminars included discussion of their investigations, as well as other topics relevant to their work in the classroom, such as behavior management issues, meeting special needs of students, and technology integration. We made fieldnotes at the end of the weekly seminars in order to plan topics for future seminars. The fieldnotes included questions and concerns students expressed in discussions during the seminars. We also made notes of topics discussed related to the lesson investigations and later used these ideas to develop questions for the interviews of the six selected students for more in-depth discussion.

During the semester, preservice teachers were required to select three strategies from the brainstorming list at the initial workshop for their lesson strategy investigations. The framework of the lesson strategy investigation included four components. During the first step, students developed lesson plans under the supervision of their mentor teacher. Because the preservice teachers were in the schools two full days each week, they were able to select instructional strategies in most curriculum areas. They also discussed their plans during the weekly seminars. Next, the preservice teachers implemented their lessons with the intent that the teacher would observe the lessons and provide oral and written feedback. As intern supervisors, we also made observations of lessons on a regular basis, and some of these observations coincided with the lessons they selected for their lesson strategy investigations. There were three types of feedback possible for the preservice teachers. All received feedback during the planning process from the mentor

teachers, who also provided feedback on the implementation of many of the lessons. In our roles as intern supervisors, we also provided feedback on plans from our observations. Finally, the preservice teachers reviewed their materials from the plans and observations and wrote a reflection on the process. Appendix A contains a list of guiding questions for the reflection piece of the investigation.

The lesson plans frequently evolved during implementation. Investigations included review of the plans with the mentor teacher, implementing the targeted strategy with children, and then receiving feedback from the mentor teacher. Some engaged in a cycle of trials that included second efforts to refine their attempts at teaching a strategy. Each preservice teacher recorded his or her efforts on the Blackboard™ discussion board. Question prompts were posted on Blackboard™ to guide, but not limit, reflections about the lessons. The preservice teachers were also encouraged to respond to other students' discussions on Blackboard™. However, most discussions were more spontaneous and occurred during weekly seminars or at the schools. Ideas from these discussions were written in our fieldnotes. Students initially made a tentative list of strategies they wished to investigate, but after the first investigation many changed the selected strategies for investigations number two and/or number three. After each investigation was completed, each preservice teacher submitted a copy of the lesson plans, observation notes from his or her mentor teacher, and written reflections on the investigation that included a "What's next?" response. At the end of the semester, all students wrote a final reflection paper on the processes and learnings from the lesson strategy investigations.

Three times during the semester, the participants were interviewed after being selected via criterion sampling. We made audio recordings of the interviews and transcriptions. Appendix B includes a sample of questions used for the interviews.

Because researcher bias is a common threat to credibility in constructivist research (Onwuegbuzie & Leech, 2005a), we organized our data collection so that the students would not be interviewed by their own course instructor. We wanted them to tell us their ideas, successes, and complaints about the lesson strategy investigations in a frank manner (see Appendix C for timeline of study and researcher responsibilities). As research interviewers, we did not know the students we interviewed prior to the study and did not have contact with them throughout the semester for other classes or activities. Further, we guaranteed confidentiality for the students by using initials of pseudonyms, and transcripts of the interviews were not shared with their course instructor until after the semester was completed and grades submitted. The internship grades were pass/fail and were submitted before beginning analysis of the transcripts of the interviews. Information provided by the preservice teachers was not shared with the mentor teachers.

Data Sources and Analyses

We took several steps to ensure trustworthiness (Lincoln & Guba, 1985: Onwuegbuzie & Leech, 2007) of our data sources and analyses. In order to provide transparency, we describe our procedures in detail and include the interview questions and reflection probes. We make our data visible by using quotations from the verbatim transcripts of students' interviews and reflection papers. Member checks (Stake, 1995) of the interviews were conducted by providing each of the interviewees with transcripts of his/her interviews with requests to review the materials for accuracy, and we asked them

to add any additional information they wished to include. We individually kept fieldnotes and at weekly meetings discussed our interpretations of the seminar meetings.

Trustworthiness is also ensured by the triangulation of data (Lincoln & Guba, 1985). We triangulated our methods of analysis by comparing the data generated from interviews, transcripts, and reflections on the lesson strategy investigations, final synthesis papers, and field notes. We report an "inquiry trail" (Lincoln & Guba, p. 317) so reviewers can examine the consistency of our process and findings. Part of this inquiry trail is the collection of fieldnotes and analysis notes including margin memos that detail the development of the themes. IRB procedures of our university require us to keep these data secure and available for auditing purposes if necessary.

By using multiple data sources, we were able to triangulate data throughout the data collection process to support emerging themes and perspectives, clarify meaning, and verify our interpretations (Creswell, 1998; Miles & Huberman, 1994; Stake, 2005). Data sources included initial brainstorming lists of questioned instructional practices from the workshop conducted during the first week of classes, semi-structured interviews of six preservice teachers conducted by the two researchers, observational notes by the two instructors, three sets of written reflections on each of the lessons submitted to Blackboard™, and final synthesis papers.

We used the constant comparison method (Creswell, 1998) to analyze the data. The brainstorming lists and observational notes were used to verify and add details to the descriptions of the processes. We began the process by separately reading through each set of data, grouping the data into smaller parts, and making margin notes that included labels indicating descriptive codes. We met weekly to review the data set we were working on and through discussion grouped similar labels. Codes were grouped based on their similarity, and themes were identified and documented (Leech & Onwuegbuzie, 2005). Because constant comparison can be used with any data set (Leech & Onwuegbuzie), we chose to use this method with data from the brainstorming lists, interviews, reflections, and synthesis papers because it allowed us to understand our students' developing beliefs and understandings of effective instructional strategies as the semester progressed. We analyzed the data sets chronologically as a way to provide a systematic review of possible belief changes during the course of the semester. We began with the initial brainstorming lists and comments on Blackboard™, then analyzed the three lesson strategy investigations, the three interviews, and ended with the final reflection synthesis paper. By employing the method of constant comparison, we were able to take information from each data set and compare it to emerging categories as we began to understand the preservice teachers' beliefs and understandings in this context. Themes emerged iteratively through each reading as we constantly compared the data.

The categories emerged as a chronological progression through the semester. Students first described how they learned about teaching strategies in coursework and then moved to identifying their sources of uncertainty or confusion, that is, which strategies did not fit their existing understanding of effective teaching. From this they were able to relate their concerns and worries and translated this into areas of need they believed were important to their development as teachers.

Findings

The findings are organized in the following areas: the ways the preservice teachers learned about research-based pedagogy, the kinds of support they reported given to them while they attempted to implement new teaching strategies, and the learnings they reported about the various teaching strategies. Finally, we include a section on some unintended learnings that occurred. (Appendix D shows the themes that emerged from the analysis of the data sets.)

For clarity in this discussion, it should be noted the preservice teachers examined a range of instructional practices, including the use of curriculum materials and even use of equipment, such as manipulatives and technology, in their investigation of strategies. Once we recognized this confusion, we decided to let them proceed with their planned investigations since they focused on areas that were of obvious concern to them.

Ways of Learning

Preservice teachers described multiple ways they learned about strategies. Instructors in various methods courses described strategies, made PowerPoint presentations that included the rationale and steps of procedures, and provided notes for the students' resources. Many reported instructors used the strategies as methods of instruction in the college classes and deconstructed their use with the class. Some incorporated role-playing, and one mentioned the "fishbowl technique," in which one group role-plays with other students viewing the demonstration but not participating. Students described limitations of role playing. LE said, "It is really different doing it with someone your own age, rather than with students because we aren't going to act the way students do." RC voiced a concern many had about strategies learned in the college classroom when they would be implemented with children, "It's like we learned all these strategies and we know them. It's not like we're ignorant. We know them, but what do I do when I'm standing on my feet?" A few instructors assigned the creation of a notebook of strategies students could use in future teaching. Finally, students reported instructors referred them to other resources, such as readings and the Internet.

If faculty believed their students understood the strategies they had described and demonstrated using the techniques listed here, the students would have agreed with them. Only one student talked about taking methods classes prior to any field experience and the resulting difficulty in understanding the lesson's use in the classroom. SN explained that,

> The kids [college students] that were in internship and in methods
> definitely have a connection. Me and a few of my friends who weren't in
> an internship, we were a little more lost, and we had to go off on what
> their experiences were.

The preservice teachers believed the explanations of the strategies were clear, but they questioned whether they could do it even if they understood. For instance, LE said, "I understood the strategy, I just wasn't sure I could do it. There wasn't a clear

understanding of it in my mind when it came to using the strategy in that classroom." LC reported,

> The easiest part of this assignment was figuring out what strategies I wanted to try out. The hard part was actually implementing the strategies in front of the class. I was just so nervous.

And RC said,

> As strategies and practices that you know about because you've learned them, but maybe you're not comfortable with putting them into practice. Like maybe you know about it, but you're not quite sure how they'd work in real world situations. … I know I have it and it sounds great, but how do I make it work in a roomful of 20 children?

Preservice teachers expressed fear of failure in attempting to teach a lesson and apprehension about handling materials and sequencing the steps of instruction so the children would learn and individual needs would be met. PC wondered, "Spilling the knowledge is the easiest part for me; it's just determining the way in which to spill it that tends to be more difficult considering the different levels." Behavior management understandably concerned them as well. Appendix E provides a list of reasons the preservice teachers identified as contributing to their reluctance to try instructional strategies taught in their courses. Their reasons fit into three general categories: anticipation of an unsuccessful attempt for a variety of reasons, lack of opportunity to observe or practice, and a mismatch with what they experienced in field experiences.

Support for Investigating New Strategies

While the list of fears was long, preservice teachers also reported many ways that they received support in learning new teaching strategies. Some indicated the classroom teacher modeled a strategy before the preservice teachers tried it out, and FC described how she adapted a lesson:

> I watched the teacher, how she did it because there's a step-by-step way in how to teach writing … I watched how she did it. She'd already done the prompt. She did the graphic organizer. Then I sort of did the same thing, but I used technology. I used Inspiration as the graphic organizer.

SN added, "I saw my fourth grade teacher doing it, and clearly it made so much sense."
Few of the preservice teachers indicated they received feedback from their teacher about lessons they implemented because teachers often worked with groups of students while the preservice teachers worked with others. SN explained, "The teacher had her guided reading. In my first investigation, she came over because she saw we were having a lot of fun with these [sentence] strips. That was the only time she actually observed me, for about five minutes." Others described various kinds of help provided by their classroom teacher, including reviewing lesson plans and making suggestions for

materials, pacing, types of questions to prepare, and organization of groups. Based on the preservice teachers' reports, the classroom teachers seemed to be able to do this even for strategies they did not use themselves. For instance, HL wrote, "She hasn't modeled because she doesn't use either one of those strategies, but we did discuss … and she gave me suggestions of how I could use it." Other assistance was provided by relatives of the preservice teachers who are in education, other team members, and friends who were in other courses with them. They described meeting with groups of friends from school, phoning, and emailing lesson plans for review.

What the Students Learned

The lesson strategy investigations may have initially tested many of the preservice teachers because we asked them to try teaching ideas about which they were not secure. The framework supported the cycle of planning, implementation, and self-reflection, and in the end they recognized their efforts had expanded their teaching repertoire, led to a better understanding of the complexities of teaching, and helped them acquire self-confidence.

Transitioning from Student to Teacher

Preservice teachers were positive about the opportunities they were given to try teaching strategies. They recognized they would soon be in a full-time internship and then have their own classrooms, and they seemed to agree an early field experience was a good time to learn because they could focus on single lessons and receive support and feedback. LE said, "She knows the kids better than I. She gave tips, and I implemented them." RC advised,

> I would say don't avoid the uncomfortable. …you have the classroom teacher as a resource. I would say zero in on that uncomfortable stuff. I used to avoid math like crazy, and now I'm a lot more comfortable with it.

Many of the preservice teachers indicated they deliberately chose lesson strategy investigations that were challenging, and made statements such as,

> I selected strategies I was most curious about. I was unsure of their effectiveness and unsure of my effectiveness in teaching them. I didn't want to choose strategies that I already knew worked or that I'd done in the past. Rather, my goal was to polish my skills in new teaching methods. (WJ)

And,

> I went into this strategy investigation knowing that teaching mathematics is one of my weaknesses. I feel much more confident teaching reading, writing, and science so I knew that this experience with testing out my

math ideas was needed. I enjoy math and problem solving, I just don't feel
comfortable with teaching about brand new concepts. (GN)

Teaching as a Complex Process

The experience opened some eyes to the complexities of teaching. The preservice
teachers recognized planning helped with the outcome, that is, with behavior
management, control, grouping, and on-task behaviors. RC commented,

> That's another thing I've learned about teaching, too. That it's much more
> than just teaching. You're watching the students, you're watching the
> time, thinking of stuff you have to do. … In terms of teaching and
> classroom management, how to integrate those things in the classroom.

GA explained her difficulties, stating, "I have worked with children before [small groups,
mentoring, etc.] but I have never taught a full lesson!" SN stated, "Seeing it on paper and
seeing someone do it are two different things. So we saw what worked and what didn't…
I remember we had to keep behavior in mind…" Several preservice teachers told about
making multiple attempts at teaching strategies in order to "get it right."

Another challenge was timing and pacing of the lessons. RJ reported, "One
challenge that I faced was pacing. I ran overtime in some experiments and the students
who were finished got a little off task." And GN wrote, "Planning lessons was fine except
for the timing. I have a difficult time estimating how long various parts of the lessons are
going to take. I seem to always end up going over."

Learning Teacher Talk

Students were puzzled by teacher talk. SN put it succinctly when she described
the teacher talk involved in a think aloud strategy. She worried, "I'm a little nervous
because I really don't know what to say or how to go about it." And "This is unnatural."
WJ was impressed by her teacher's ability to ask higher order questions, "She could think
of questions on the spot like she'd created Bloom's taxonomy herself." Others were
concerned about what to do when children gave unexpected answers.

The Importance of Planning

Both authors have worked extensively with interns in the past and have been
discouraged with the apparent disregard by some for the need to plan thoroughly.
Teachers sometimes reinforce this attitude because they have internalized many of the
planning processes and seem to have forgotten the lack of automaticity of teaching
behaviors by novice teachers. The reflective process in the lesson strategy investigations
seemed to make visible the need for planning to the preservice teachers. The following
quotations express this understanding of planning:

> It is important to thoroughly plan …. I do complain about it, but those
> were the best lessons so it's a double-edged sword kind of thing. You

know taking the time to really think through it and write the details down helped me. I was more successful when I did that than when I just said I'll do this and this and this. (RC)

The biggest challenge I had was time. There was so much I wanted to share with them about this book, but was only allowed 30 minutes. Many ideas were pushed by the wayside because we simply ran out of time. … In future lessons I will look closely at my lesson and narrow down what exactly I want to teach from the book … what is important to teach in a lesson. (MT)

When looking back over the course of the semester, the most important thing I've learned throughout these investigations, aside from the actual material, is that preparation is key to effective instruction. Although I've been told this many times throughout my internships, I realized through the actual planning, executing, and reviewing of my lessons just how important preparation is in creating lessons designed specifically for my unique group of students. (WJ)

Acquiring Self-Confidence

Understandably, preservice teachers are nervous about handling all of the demands of teaching. BM's reflection mirrors what many of the students felt at the beginning, "The first day I walked into that classroom I was nervous and had no self-confidence. I wasn't sure I could even do it." MH wrote, "When we first started this semester I was agonizing over the assignments. I was so uncomfortable about controlling a situation where I had no clue what was going on or I wasn't comfortable in the situation."

By the end of the semester, they recognized their increased self-confidence. In her final reflection, GN described her feelings, "One of the biggest things I am carrying away from this experience is courage. I now have more courage and confidence to try out new things knowing that they will not always turn out perfectly the first time." And MG wrote, "I have come to the realization that it is OK not to teach a perfect lesson. Actually it would be almost impossible. There will be times when the unexpected happens; and when it does, you address the situation the best way possible and continue on with the lesson." When asked what the lesson strategy investigations helped her discover about herself as a teacher, PS replied, "This semester has taught me that I am able to teach, and I just need to give myself a chance." FC learned,

I can be effective, like the things I thought were going to be the most uncomfortable or toughest, they weren't actually that hard. And that's been helpful, and being adaptable – changing things, you know that's part of the reflecting process and that's been helpful.

After the first lesson strategy investigation, PS worried, "There are so many things I want to do well and so many things I have yet to accomplish. I often worry about how I will ever be able to do this." In a later lesson reflection she wrote,

> I feel I am becoming more comfortable working with the whole class. I feel they are responding to me and my teaching. I also feel I am becoming more effective in my teaching. Confidence is the key, I guess.

Unintended Learning - What Makes a Lesson Successful

Teaching as Performance

Many of the preservice teachers focused more on their own performance than on that of the children. While they certainly understood the concept that practice makes perfect, they were focusing primarily on practicing their own presentation skills in order to deliver an effective lesson. Students made comments such as the following:

> If I need to practice, I am going to find someone to practice on. … I got to try it on my boyfriend. (LE)

> Try everything twice, three times, four times, before you do it with the kids because whatever could go wrong will go wrong. (FC)

> I figured the first one was going to be rough, the second and third groups would be easier, so by the time I was with the third group I was a complete pro. (NS)

> Not only do it, but have it become a natural habit where I don't have to sit down and write out a 10-page lesson plan or write out my questions every time. Where I could just stand in the classroom, read a book, and at the end just have that question ready to take them to the next level. (WJ)

Engagement as the Indicator of Learning

Two students seemed to grasp the notion that student learning is the key indicator of a successful lesson and learning is measured through assessment. MG wrote, "I have learned that knowing the content front to back is not as important as reaching out to the students. Making connections with them and finding out what they can comprehend is important." And SM explained, "Primarily I found it hard to judge the success of my lesson. The primary indicator for me was how well students completed their follow-up exercises. For the first strategy investigation …, I had two separate assessment activities."

Most others, however, focused on other aspects of the lesson as their determiners of successful teaching. In general, preservice teachers focused on their own performance and student engagement. The following are representative statements:

It made this lesson so much fun for the students and me. The students seemed to be really engaged in the lesson. I felt as though they were really getting something out of the lesson and enjoying it at the same time. … They really had a blast and so did I. (CT)

Will I be an effective teacher, are students staying engaged and enjoying their learning? (PS)

It came out real cute, and the students seemed to get it. (FC)

I would have to say that the 'aha' moment, the point that I knew the strategy was a success, came when I heard the bell ring to switch centers and children were actually sighing. (GN)

Appendix F presents a list of the preservice teachers' concerns and their perceptions of their needs. In the next section, we discuss the messages received and the lessons learned by the preservice teachers during their lesson strategy investigations.

Discussion

The purpose of this study is to describe how preservice teachers used a framework of planning, implementation, feedback, and reflection in order to attempt research-based teaching practices learned in their methods course while examining their notions of effective pedagogy during a field experience. Probably many of the preservice teachers echoed SN's thoughts when she explained that at the workshop when the lesson strategy investigations were first explained, "Most of us were thinking 'Let's do this stupid strategy.' We weren't really into it at the beginning." BM wrote, "At first I found it odd to think that my teacher would ask me to do something in the classroom I wasn't comfortable with. I thought, 'Why would she have us engage in something that gives us trouble?" Over the course of the semester, we found indications in the data the preservice teachers grew in their understanding of teaching, planning, and reflection.

As the semester moved on, most seemed to grasp the internship as an opportunity to try out what challenged them. Since the field experience must be successfully completed before the preservice teachers can begin their final, full-time internship, we initially worried they would select safe rather than challenging strategies. This did not seem to be the case, however, because their reflections and syntheses were quite descriptive of their thought processes and concerns. Most of the preservice teachers readily admitted to failed attempts and the need to try strategies over again.

The written reflections may have given the preservice teachers opportunities to look back over their lessons and see the advantages of planning and disadvantages of the lack thereof. Because the emphasis of the entire semester was on trying out what was challenging and not well understood, our classroom observations and evaluations were framed as process rather than summative evaluation. If this encouraged them to take risks, then we would judge the use of the lesson strategy investigations as a welcome change.

While Dewey (1933), Mezirow (1981, 2000), Schön (1987), and others believe students can learn to reflect, some (Kegan, 1994; Kitchener & King, 1990; Merriam, 2004) caution that reflection may be dependent on the maturity of the student. Considering that the preservice teachers were operating as novices in many different ways, such as planning, implementing strategies, and behavior management, we should not have been surprised that they did not exhibit profound levels of self-awareness. Two themes we grouped as unintended learnings emerged from the data. The first was the preservice teachers' preoccupation with their own performance rather than the children's learning, and the second was children's enthusiasm and engagement as indicators of successful lessons.

Mezirow (1998) differentiated between types of reflection, and the preservice teachers may have been operating at a middle level of introspection, that is, *process reflection* involving thinking about the experience itself without reaching beyond to reflection on alternatives to actions or implications. We recognize their need to practice their lesson delivery in order to gain self-confidence, learn teacher talk, and master the various steps in their lesson plans. At this point in their development, however, their focus was primarily still inward. Our review of the data also caused us to be concerned that so many of the preservice teachers prioritized the children's happy engagement in lesson activities. The nature of this field experience with two days per week in the classroom may have emphasized immediate, observable indicators of successful lessons, that is, enjoyment and on-task behaviors, instead of indicators that required applying assessments over longer periods of time. Considering the steep learning curve required in the field experience, the perception of successful teaching the preservice teachers had when their students were engaged and enthusiastic about learning may have biased their views of what makes a lesson successful.

These two themes were unintended in that we would not want our students to leave the program only looking inward at themselves and how well they performed the lesson and miss the assessment piece of teaching. We do see these as developmental stages in their growth as teachers.

Our second research question identified what the preservice teachers viewed as influencing their development of beliefs about the effectiveness of instructional strategies. The preservice teachers focused on two aspects of their field experience as being most beneficial for their growth as teachers. Over and over they spoke and wrote about the need to try out strategies and the desire for more opportunities to teach throughout their program. Secondly, they valued the input of their classroom teachers who helped by modeling strategies and with planning. They did not complain that some did not make actual observations of their attempts at teaching because teachers often organized small groups to work with during the preservice teachers' lessons. From their viewpoint, their learning came foremost from teaching, even when the lessons were not that successful. As intern supervisors we know at some point, however, unsuccessful lessons can overwhelm preservice teachers, and learning everything from experience can be hard on both the preservice teachers and the children in their classroom.

Concluding Thoughts

Every attempt was made to provide opportunities for the preservice teachers to respond frankly. But were our students overly optimistic? Students directly told us they began the investigations with skepticism and would not have tried out these teaching strategies without the challenge directed at them. Perhaps this is true. Without experimental controls we cannot attribute cause and effect. This is a descriptive study in which we have reported representative quotations as indicators of the various themes that emerged through our analysis of the data. We, the authors and instructors of these students, do believe there would not have been such universal buy-in to the risk-taking we saw without the framework of the lesson strategy investigations. By structuring this field experience around the idea of preservice teachers challenging themselves to try out teaching in areas that were difficult, we gave them permission to make mistakes and to try, try again. We believe they saw our roles differently, and we also saw our roles differently. We became facilitators and evaluators of the process (investigating one's own teaching practice and reflecting) rather than critical evaluators of the product (the lesson demonstration).

The educational significance of this study may lie in several areas. First, new teachers are provided little time to be novices. First year teachers are just as accountable for the learning of their students as 10th year teachers. Novice teachers need access to effective and research-based instructional practices and cannot spend several years trying to discover them. Second, teachers need to develop habits of investigation and reflection so their teaching will not devolve into a series of intuitions. Further research is needed here to see if these preservice teachers continue to develop their practices of investigation. Third, preservice teachers must interrogate their existing beliefs and not accept them without investigation. Cognitive dissonance, that is, the psychological discomfort they experience when confronted with new ideas that do not fit into existing schema, should be a welcome sign they are encountering an opportunity to scrutinize preconceived and unexamined ideas against new information, and this scrutiny can lead to new learning and better understanding.

In this study we did not attempt to measure the amount of growth preservice teachers had as a result of using the framework for planning, implementation, feedback, and reflection. We also do not have a metric for gauging what might be considered the expected growth at this point in their program for the preservice teachers on such indicators as planning, assessment, and use of instructional strategies. One could argue, therefore, that these preservice teachers would have developed their teaching skills given the amount of time in the classroom under the watchful eyes of experienced teachers. We see the value of the lesson strategy investigations in two areas, the encouragement for the preservice teachers to step out of their comfort zones and try out new ideas and the engagement in a recursive reflection cycle. Our recommendations for further research are to follow up on the use of the framework for investigation and reflection with interns who are in their final, full-time internship. We would also like to involve the mentor teachers more in the reflection dimension of the investigation because we believe this is a critical teaching behavior for continuing development of expertise in teaching.

Finally, the written reflections and oral interviews provided us with an energizing glimpse into the students' thinking during their field experiences. They shared with us

snapshots of their planning, resources retrieval, concerns, unsuccessful attempts, and triumphs from behind the scenes. We admire their efforts, and in several instances extreme efforts, to become good teachers, meet the needs of their students, and figure out the complexities of teaching.

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Appendix A

Guiding Questions for Consideration in the Lesson Strategies Investigations

Questions for individual investigations:
1. What were your notions about this strategy that you had at the beginning?
2. What went well? / Why?
3. What were the challenges / Why?
   What would you do differently if you could do the investigation over again?
4. How will your teaching change as a result of the investigation?
5. What are your areas of growth as a professional?
6. What do you need to do next?

Questions for final, summarizing reflection
1. What have you learned –
   • about your self as a teacher?
   • about teaching?
   • about children?
   • about yourself as a reflective practitioner?
2. What was easy about this assignment?
3. What would you change?
4. What was the most challenging aspect about reflective practice?
5. What advice would you give to other interns about investigating their own teaching practices?
6. Any other comments and insights would be very helpful.

Appendix B

Interview Questions for Six Preservice Teachers

Interview 1
1. Confirm pseudonym and grade level.
2. Confirm permission to tape interview.
3. When in methods courses where you are supposed to be learning teaching strategies for particular areas of the curriculum, how do instructors teach you to implement those strategies? (May give examples – describing, modeling, role play, assign to try out with children.)
   • How do these techniques work?
   • How do you remember the teaching strategies in later field experiences?
4. What areas or teaching strategies have you proposed for your investigation?
   •   What caused you to have a feeling of "disconnect," that is, saying to yourself "I haven't ever seen anything like that before" or "I can't picture that working."

Please describe.

Interview 2
1. Confirm pseudonym and contact information.
2. What strategies did you decide to investigate?
3. How have you planned to investigate?
4. What have you done so far?
    • How is it working? Please describe.
5. What have you learned so far?
6. Are you planning to revise your investigation plan based on what you have done so far? If so, please describe.
7. What help do you need?

Interview 3
1. Confirm pseudonym and contact information.
2. Please describe your investigation.
    • What worked?
    • What didn't work?
    • What kinds of changes did you make in your plan and process along the way?
3. Please describe how your teacher helped you in the process.
4. Did you receive other kinds of help? (for instance, from other teachers or teammates)
5. What have you learned about teaching?
6. What have learned about yourself as a teacher?
7. What help would you suggest for future groups of students doing the Lesson Strategy Investigation?

Appendix C

Timeline of Study and Researcher Responsibilities

Semester	Cohort 1	Cohort 2
Week 1	Researcher #1 Workshop at beginning of semester	Researcher #2 Workshop at beginning of semester
Week 2	Researcher #2 Interview 1 with selected students	Researcher #1 Interview 1 with selected students
Weeks 2 – 8	Researcher #1 Field experience Observations Seminars	Researcher #2 Field experience Observations Seminars
Week 8	Researcher #2 Interview 2 with selected students	Researcher #1 Interview 2 with selected students

Weeks 9 – 14	Researcher #1 Field experience Observations Seminars	Researcher #2 Field experience Observations Seminars
Week 15	Researcher #2 Interview 3 with selected students	Researcher #1 Interview 3 with selected students

Appendix D

Emerging Themes from Data Sources in Order of Analysis

Themes	Data Set	Data Source
• sources of uncertainly or confusion	*Brainstorming list*	Blackboard[TM] discussions board
• ways of learning new strategies • support for investigating new strategies • importance of planning • teaching as complex process • acquiring self-confidence • unintended learnings	Interviews with 6 students	Transcriptions of audio tapes
• ways of learning new strategies • support for investigating at new strategies • importance of planning • teaching as complex process • teacher talk • acquiring self-confidence • unintended learnings	Written reflections	3 lesson strategy investigations
• importance of planning • acquiring self confidence • transitioning from student to teacher • unintended learnings	Synthesis/ reflection papers	Final reflection submitted to Blackboard[TM]

Appendix E

Reasons Identified by the Preservice Teachers for Reluctance to Try New Teaching Strategies

• lack of opportunity to practice what they had been taught • a failed attempt to try out a strategy • classroom teachers not using a strategy • concerned with behavior management • issue of developing teacher talk, higher order questions, giving directions children understand, answering children's follow-up questions • tried out with small group, but had not done it with large groups

- no opportunity to see how teachers develop classroom organization, routines, and management during the first few weeks of school
- recognizing their own elementary school experiences were in conflict with what they are being taught
- taught newer methods at the university than they have the opportunity to observe in schools
- lesson plans written in courses without implementation with children
- being taught a strategy in a course and discarding it because they didn't like it for some reason or after one observation of its implementation
- need for practice so certain teaching behaviors become habits, such as higher order questioning
- need for extensive lesson plans listing every detail
- some strategies were criticized by classmates

Appendix F

Preservice Teachers' Concerns and Needs

What are teacher candidates' areas of concerns?
- behavior management
- how to talk like a teacher, give directions, ask questions
- time and pacing
- teachers allowing them to try strategies out they did not use themselves
- math manipulatives and teaching math processes (e.g., learned fourth grade math concepts but do not have strategies to teach; will children be too excited with manipulatives, coordinating manipulatives with the progressive steps of the math concept)
- learning how to compromise with the teacher, will the teacher allow them to try out an unfamiliar strategy
- correspondence of lesson plans with what happens in real life in the classroom
- worried they were writing extensive lesson plans and then had to change elements of it once they were actually teaching the lesson in the classroom

What do teacher candidates' see as their areas of need?
- the what, the why, and the how of a strategy--they learn the what and why, but need to actually try it out to understand how it works in real-life
- field-based opportunities concurrent with learning strategies
- need to feel self-confident
- need to acquire automaticity in some of the teaching behaviors, such as lesson planning, asking higher-order questions
- strategies for behavior management
- need to be able to anticipate what children will do, what kinds questions they will ask
- practice managing manipulatives, equipment, and other materials
- more modeling from course instructors and internship teachers

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