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Pre-service Teachers’ Beliefs about Learning and Motivation:
Are We Asking the Right Questions?

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The Center for Advancing the Study of Teaching and Learning promotes systematic and intentional inquiry into the teaching-learning process and, through careful and collegial study of learning-centered environments, seeks to advance the understanding and dissemination of evidence-based study of the teaching-learning process in service of all learners.

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- Promote socially just, learning-centered environments that bring excellence and equity to all learners;
- Foster systematic and intentional inquiry into the beliefs that educators hold about educational theory and research and effective practice;
- Honor research, theory, and practice as legitimate and complementary sources of knowledge regarding the teaching-learning process;
- Elevate professional learning and educational practice to the level of scholarship;
- Advance the conceptual framework of leadership as learning;
- Develop a knowledge network fueled by researchers, theorists and practitioners who contribute to advancing the study of the teaching-learning process;
- Establish and perpetuate an international community of teacher-scholars representing a variety of teaching and learning environments;
- Promote and coordinate communication within a network of educational institutions and organizations that collaborate in the recruitment and education of teacher-scholars;
- Create a culture of professional learning based on research situated in schools and in other learning environments;
- Examine and develop methodologies by which the teaching-learning process is studied;
- Advocate for the enhancement of the teaching-learning process in service of all learners; and
- Share what is learned about the teaching-learning process.
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Changing Pre-service Teachers’ Beliefs about Learning and Motivation: Are We Asking the Right Questions?

How can we change teacher beliefs? This question seems to dominate the teacher education literature, and we argue that it can be inappropriately limiting. Understanding the powerful role of teacher beliefs requires us to move beyond conceptions that teacher education should actively work to change the beliefs that pre-service teachers hold. This position assumes that pre-service teachers are aware of the beliefs that they hold, and that the beliefs that they hold have no utility. It is our contention that teacher education should focus its energies on engaging pre-service teachers in processes and experiences that actively foster intentional inquiry into the implicit and explicit beliefs that they hold about teaching and learning.

To flesh out our argument, we examine how an educational psychology course engages pre-service teachers in a process of systematic and intentional inquiry focused on revealing, examining, and challenging the validity of their beliefs about teaching and learning. We investigate how students employ this process to develop the knowledge, skills and dispositions to continuously examine their beliefs against relevant theory and research. Specifically, we examine the journey that pre-service teachers take when they intentionally examine their beliefs regarding motivation.

The Role of Teacher Education in Changing Pre-service Teachers’ Beliefs

Much of the literature on teacher education has highlighted the notion that engaging pre-service teachers in a process of examining their beliefs is critical to developing teachers who are scholars of their practice. While we agree with this basic tenet, we view the literature as inappropriately limiting because of the a priori assumptions that changing existing beliefs should be the preferred outcome of teacher education. During the last two decades many studies have explored various aspects of the tenacity of pre-service teacher beliefs documenting that: (a) pre-service teachers enter their programs with firmly established beliefs based on prior classroom experiences (Ashton, 1990; Ashton & Webb, 1986; Brookhart & Freeman, 1992; Richardson, 1996; Wideen, Mayer-Smith, & Moon, 1998; Wilson, 1990; Wubbels & Korthagen, 1990); (b) teachers’ beliefs have an important influence on their teaching (Pajares, 1992; Richardson, 1996); and (c) it is difficult to change pre-service teachers’ beliefs during their teacher education programs in spite of intentional and sometimes long-term efforts to do so (Buchmann, 1984; Florio-Ruane & Lensmire, 1990; Wideen et al., 1998; Wilson, 1990). As Wideen et al. (1998) pointed out: “it seems pointless to seek to change beliefs if evidence supports their enduring quality” (p. 144). The common denominator across these studies is the assumption that pre-service teachers enter teacher education with firmly held beliefs that are somehow flawed and therefore must change.

Raths (2001) has recently argued that there are several difficulties with past attempts to change pre-service teachers’ beliefs. The first, previously noted, is that most approaches have been ineffective, or at best have taken a considerable amount of time. Second, Raths argued that ethical issues with changing pre-service teachers’ beliefs arise, especially given the position of power held by teacher educators. Third, Raths argued that even if we could effectively and ethically change the beliefs of pre-service teachers, it would be impossible to reach consensus on the beliefs that pre-service teachers should hold. Given what he views as these three nearly insurmountable issues, Raths (2001) has proposed a different way of conceptualizing teacher education. Rather than attempting to change
beliefs, he proposed that we focus instead on strengthening dispositions. Although this is an intriguing proposal, it is fraught with inherent limitations.

First, although the concept of dispositions occupies a great deal of current teacher education rhetoric, definitions of the term remain erratic, arbitrary, ambiguous and inconsistent. Over the years, dispositions have been described as motives, beliefs, traits, attitudes, values, commitments, perceptual characteristics and/or professional ethics (e.g., Erickson, Hyndman, & Wirtz, 2005; Katz, 1993; Katz & Raths, 1985; Ryle, 1949). The National Council for Accreditation of Teacher Education (NCATE), for example, developed a definition of dispositions that they published in a glossary of terms in their 2002 manual:

**Dispositions.** The values, commitments, and professional ethics that influence behaviors toward students, families, colleagues, and communities and affect student learning, motivation, and development as well as the educator’s own professional growth. Dispositions are guided by beliefs and attitudes related to values such as caring, fairness, honesty, responsibility, and social justice. For example, they might include a belief that all students can learn, a vision of high and challenging standards, or a commitment to a safe and supportive learning environment. (NCATE, 2002, p. 53).

Whereas researchers, professional organizations, and accrediting bodies agree that developing certain professional dispositions is critical to producing effective teachers, there is little agreement about how to:

- define the term,
- distinguish dispositions from beliefs or attitudes,
- effectively incorporate dispositions into teacher education programs,
- credibly gauge the ways that dispositions develop in teacher candidates, and,
- document their existence beyond the short lives of teacher education programs.

As Freeman (2003) reminds us, “The notion of dispositions inherently involves situational contingency and action or patterns of actions. Therefore, the paradigm shifts from social science to moral science. And this shift calls for a new way of talking and making judgments based on something other than counting and scaling behaviors.” We can never be quite sure if someone is “engaging in these patterns of behavior simply to get a pass” (p. 9).

Secondly, we acknowledge the concern that schools of education as well as accrediting bodies have been unable to effectively define and gauge dispositional growth. In the closing paragraph of a letter that he wrote to the chair of the American Association of Colleges for Teacher Education (AACTE) referencing the October 16, 1999 draft of the NCATE 2000 Standards, James Raths (1999) put it this way:

*I have worked hard to carry out research using "dispositions of candidates" as a variable. I have been unable to scale dispositions reliably—and my research program is essentially a failure. I have searched the literature and appealed to measurement specialists on a national scale for help, but there is little out there. So much of what is written in these standards calls on our colleagues to measure dispositions and their strengths. Can it be done? I consider it a strategic and grave error*
to include this language, and a violation of my Principle 2. This language requires units to do something that cannot be done. Please take this technical problem into account when considering a revision of the document. Indeed, if any member of the NCATE standards-writing team knows how to measure dispositions reliably, I would consider it a personal favor if I could be informed of the procedures.

The “Principle 2” that Raths refers to in his comments is included in the letter as: “Avoid writing standards that are almost impossible to document or assess.” Six years later, arguably, little has changed.

Noting these important cautions, we still find merit in pursuing a line of research aimed at fostering dispositions toward examining the beliefs that drive decisions of practice. We recognize that even though pre-service teachers enter universities with a set of beliefs that are deep-seated and tenacious, teacher education can influence the role that existing beliefs play in learning to teach. Three factors appear to be critical to these efforts: the existing beliefs of pre-service teachers can provide a foundation for learning (Wideen et al., 1998); pre-service teachers must recognize their own beliefs (Bullough, 1992; Graber, 1996; Gunstone, Slattery, Baird, & Northfield, 1993; Hollingsworth, 1992); and pre-service teachers can construct new understandings of teaching by uncovering their own beliefs (Driver, Asoko, Leach, Mortimer, & Scott, 1994; Fosnot, 1996; Moss, Brookhart, Gosnell, & Haber, 2002; von Glaserfeld, 1987). And we agree with Raths (2001) that reconceptualizing the work of schools of education toward strengthening dispositions might be a way to focus the influence that schools of education can have on pre-service teachers and the way that they approach their beliefs about teaching and learning.

As researchers and teacher educators, we believe that we must avoid the trap of holding our own unquestioned assumptions that pre-service teachers’ beliefs are somehow wrong or inadequate and must be corrected. Based on the existing research, we argue that teacher education should equip pre-service teachers with dispositions toward systematic and intentional inquiry (Cochran-Smith & Lytle, 1993; Moss, 1997, 2001) focused on using theory and research to continuously reveal, examine, and challenge their beliefs (Moss, 2001), instead of teaching them that they must necessarily change their beliefs. Our goal, therefore, is not to teach students what to believe or even necessarily to convince them they must change the beliefs that they hold; rather our goal is to help them learn how to recognize, uncover and challenge their beliefs through the lenses of theory and research. In doing so, we intentionally foster both an appreciation for the role that beliefs play in their decisions of practice and a disposition toward systematic and intentional inquiry. Learning this process sets in motion the potential for lifelong learning, since it fosters a healthy skepticism about the validity of the beliefs that we hold: beliefs that are supported by theory and research today may not stand up to scrutiny of relevant theory and research in the future (Moss, 2002; Schreiber & Moss, 2002).

Fostering a disposition toward this type of systematic and intentional inquiry can be conceptualized as requiring three sets of competencies spelled out in the framework used in current NCATE standards for teacher education: development of knowledge, skills, and dispositions. Within our course, we define and assess knowledge as pre-service teachers’ ability to accurately describe theories and research of learning and motivation within the context of teaching practice, and to use these to analyze decisions of teaching practice. Ideally, skills are defined and ultimately assessed as teachers use their knowledge of theories and research in actual classrooms. Those skills develop, however, as students are engaged in simulations of the real work of classroom teaching. The literature bears out
our contention that a critical element of effective classroom practice is effective research-based instructional planning (i.e., Calderhead, 1996; Gronlund, 2004; Sternberg & Horvath, 1995). In our educational psychology courses, therefore, we intentionally gauge our students’ skills in using theory and research as they make effective decisions of teaching practice within authentic tasks of instructional planning. In order to define dispositions, we borrow from Schussler (2005), who proposed that teacher dispositions include self-awareness, reflection, and desire. We add one additional element, that of intention. Dispositions require intentionality on the part of the individual in a particular context, across contexts, at particular times, and over time. They are “summaries of act frequencies” (Buss & Craik, 1983, p. 105) that demonstrate behavior trends or regular occurrences of acts in the absence of coercion or rewards. As teachers, we can be aware of using theory and research to challenge assumptions, we can reflect upon how theory and research inform our assumptions and therefore our teaching practices, and we can desire to use this process to improve our teaching practices, but unless we have the intentional goal to engage in this process, it becomes an incidental outcome and we are unlikely to change.

In the current study, we examine how an educational psychology course helps students learn this process of revealing and challenging both their beliefs about the teaching-learning process in general and specifically their beliefs about motivation. We chose to examine beliefs about motivation for three reasons. First, little research has been published on teachers’ or pre-service teachers’ beliefs concerning motivation, and we believe it is an important and timely topic worthy of attention. Second, because motivation was the last topic covered in the course, we believed that tracking students’ beliefs on motivation from the beginning to the end of the course would reveal the clearest evidence of their learning. Finally, teacher beliefs are messy constructs that fuse both personal and professional dimensions (Moss & Schreiber, 2004; Schreiber & Moss, 2002; Schreiber, Moss, & Staab, 2005, in press), and we have noticed in this course that as pre-service teachers examine beliefs about how they can foster motivation in their future students, they also examine the beliefs that drive their own learning and actions.

**Description of the Course**

This qualitative study examines the learning of students who have taken a Masters level online course titled “Theories of the Teaching-Learning Process.” Our graduate students are required to take this course that parallels much of the content typically covered in an undergraduate Educational Psychology course. The co-authors have team-taught this course as a 6-week session for four consecutive summers. The major learning objective was to develop an understanding of “relevant theory and research operating in effective practice” (Moss, 2000). In other words, we were not interested in having students learn theories simply for the sake of learning theories, nor were we interested in their learning a list of "best practices." Rather, we wanted students to: (a) understand theories of human learning and motivation as lenses through which to consider practice; (b) recognize, reveal and challenge their assumptions about teaching and learning; and (c) use theory and research to evaluate, defend, and/or modify their decisions of teaching practice.

In designing the course, we made the assumption that a crucial element for professional education courses, particularly those not specifically tied to field experiences, is the need to anchor students’ learning in authentic contexts. In previous versions of the course on campus, we found that students who lacked teaching experience had difficulty applying theories and research to authentic issues of
concern in the classroom. In addition, they tended to get lost in a sea of theoretical terms and research results. Therefore, we sought a way to focus their learning on authentic decisions about effective teaching practice while also helping them synthesize the large amount of theoretical concepts and research into a few "big" ideas that could be learned meaningfully in six weeks and that would serve them in their future as educators. In addition, we wanted to focus our collaborative teaching efforts so that our comments and feedback on the bulletin board discussions and student assignments were anchored in a common set of theoretical principles. This would allow us to both support and challenge our students as individual instructors and as an instructional team. One of the researchers had successfully used a systematic and intentional learning process called the Teaching as Intentional Learning Process (Cunningham, Schreiber & Moss, 2005; Moss, 1997; Moss, 2002; Moss & Shreiber, ______) in her graduate courses for over ten years. This process engages pre-service and in-service teachers in recognizing, revealing, and challenging their underlying assumptions through the lenses of theory and research. Based on that effort, we felt that applying a modified version of that process to our work in this course with pre-service teachers held particular utility.

With these fundamental ideas in mind, we asked each student to begin the course by proposing a learning project to serve as the context for investigating relevant educational theory and research that supports effective teaching. Learning projects consisted of a unit or program students intended to teach in their anticipated professional positions. Students began by writing an overview of the learning project that was due at the end of the first week. The overviews included a description of the targeted learners, intended learning goals, major learning activities, and products and/or performances used to assess achievement of the learning goals.

During the second through fifth weeks students used theories and research to analyze and refine their projects, filing a progress report at the end of each week. In order to assist their learning, we developed a set of key theoretical principles (McCown & Moss, 1996; McCown, Moss, & Peterson, 2001; Peterson & Moss, 2002) that were broad, integrative statements designed to help students synthesize the large amount of theoretical concepts and research into a few "big" ideas. In each progress report, we asked students to use theoretical concepts and research underlying the key principles to analyze decisions of practice in their learning projects. We encouraged them to reveal and examine the implicit and explicit assumptions that came to light as a result of their new learning, to consider the validity of these assumptions, and to discuss specifically how they could use theory and research to justify sound decisions in their projects and to refine, replace or change those decisions when warranted to make their project more theoretically sound and research based. In addition to the key principles, we provided weekly reading guides to help focus attention on important theoretical ideas, and to supplement areas in the text that we felt were lacking in crucial substance. Students engaged in online discussions by posting questions and responding to colleagues via an asynchronous bulletin board with regard to theory, practice, and the assumptions they were making about the nature of teaching and learning.

During the sixth and final week, students prepared a reflective summary report highlighting their areas of most significant learning, along with a list of theoretically supported beliefs they had developed about the teaching-learning process.

The online course was designed and supported by the Center for Advancing the Study of Teaching and Learning (CASTL) at Duquesne University. As a result, the course was able to utilize many of
CASTL’s resources including CASTL Information and Resource Library, and CASTL’s intranet resources that include private mail accounts, common and private chat rooms and instant messaging. In addition, CASTL multi-media and technical staff worked with students to eliminate any technology or use barriers that might interfere with their learning.

Methods

Participants

Participants in the study included students who were enrolled in the course from 2002 to 2005. Students were included in the study if they met the following criteria: (a) Students must have been seeking initial teacher certification when they took the course, (b) Students must have been enrolled in the course before completing student teaching, and (c) Students must not have had classroom teaching experience. A total of 40 students met these criteria over the four years included in the study. Twenty-seven were females; thirteen were males. Their teacher education majors were: 10 Secondary English, 14 Social Studies, 3 Math, 1 German, 1 French, 1 History, 1 Biology/Science, 2 Science, 6 Elementary Education, and 1 Special Education. Students were at various stages of their programs, ranging from their first semester to the final semester before student teaching. In addition, the two researchers served as both course instructors and committed and involved participants in all online discussions via the bulletin boards and the common chat rooms.

Data source

The data source consisted of three of the six written reports that students submitted during the six weeks of the course: their project overview, written at the beginning of the course; their fourth progress report where they considered theories and research on motivation, written during the fifth week of the course; and their reflective summary report where they discussed their areas of most significant learning, written during the final week. These papers along with all of their bulletin board posts are archived in the CASTL data base.

Data Analysis

We adopted a qualitative approach to guide our attempts to understand the real changes and dynamics that are embedded in the complex archives of online learning. First of all, our quest to understand and document what was happening to our students required us to investigate issues of meaning. To do so, we adopted a stance suggested by Shank (1994; 2002) and approached our research as systematic empirical inquiry into meaning. We resisted the temptation to create coding schemes to order and systematize these data since we agree with Moss and Shank (2002) that this sort of data, geared as it was to the “change and evolution of belief within a shared online culture [requires] a quasi-literary approach.” Therefore, we chose to adopt a sort of “close reading.” This approach allowed us to use key turning points and the words of our own students to anchor themes, discover embedded patterns, and not miss “infrequent but embedded significant instances of insight” (Gibbs, Friese, & Mangabeira, 2002). These emerging themes were used to address the following questions: (1) Do pre-service teachers develop the knowledge to describe theory and research within the context of instructional planning? (2) Do pre-service teachers develop the skills to use theory and research to make effective decisions of teaching practice? (3) Do pre-service teachers develop the dispositions to challenge their assumptions, particularly with respect to self-awareness, reflection, desire, and intentions?
Discussion of Findings

Our initial findings are organized and discussed around the general themes provided by our research questions. Findings are accompanied by several exemplars chosen to anchor them in language drawn from student reports. Our goal here is not to count or quantify the numbers of these occurrences but rather to explore the dynamics that are embedded in the complex data set that this online course generated.

Question 1: Do pre-service teachers develop the knowledge to describe theory and research within the context of instructional planning?

It is important to contextualize the findings under this first question by first sharing some of the words of the students themselves as they discussed their six-week experience via their summary report. It is interesting to note their own wonder at the naïve stance that they previously adopted regarding learning to teach and their expected outcomes for the course:

*I feel that I was pretty naive about the entire discipline before the course work began. I enrolled in this course because it was a requirement and really didn’t expect to learn anything new.*

*This material was all very foreign to me in the beginning. I felt familiar with some of the concepts on an intrinsic level but, once deeper learning began to take place, I realized that what I had already understood was simply the tip of the iceberg.*

During the course, students clearly developed knowledge of theory and research that enabled them not only to describe what they intended to accomplish in their projects, but also to justify why they made certain instructional decisions to best accomplish it. Their reports provide documentation for their developing knowledge through the increased sophistication and nuanced character of how they describe their decisions of practice. We also discovered that students were more able to adopt a relational view of theories moving from seeing specific theories operating in specific parts of their projects to the ability to see theories operating together and threaded throughout the fabric of their projects. For example, when describing her project on basic statistics, an elementary education major demonstrated her increasingly sophisticated understanding of the benefits of using authentic learning tasks. In this report, she was able to describe how her initial assumptions had become informed by her new understanding of social constructivism and self-efficacy. As a result, she was able to defend her earlier decisions of practice by integrating more than one theoretical perspective:

*I involved real life situations just because I thought it made the students more interested in the topic. I also thought that if the students were able to have a say in the types of activities they would be more interested. What I didn’t realize was that these “authentic tasks” would help with higher-level thinking and self-efficacy. Because authentic tasks relate information to real-world situations they require that students synthesize information, form and test hypotheses, solve problems, and draw conclusions (Ormrod 402). These activities promote higher-level knowledge because according to Ormrod, they “require students to seek out information in a variety of contexts” (402). By encouraging students to work together through authentic learning experiences, a community of learners is created. In a community of learners classroom where the teacher and students actively...*
and cooperatively work to help one another there are many benefits. “It encourages students to clarify and organize their own thoughts sufficiently to express them to someone else, it gives them an opportunity to observe the learning an problem-solving strategies that their classmates use, and it increases their sense of self-efficacy about performing classroom tasks successfully” (Ormrod 402). So here I was thinking that I just wanted my students to not be bored. I had no idea that these activities and cooperative learning groups will lead to higher-level thinking, which will ultimately lead to more successful students thus increasing their self-efficacy.

Another example occurs in a social studies teacher who is also describing how to embed self-efficacy theory into his project. Notice that his last paragraph of the discussion weaves elements of self-regulation, scaffolding, the zone of proximal development and even elements of reinforcement as he further develops his project:

I applied this theory to my learning project (a unit on social skills for 8th grade students lacking social competency). For example, I added peer testimonials and “success stories” to my project. I expanded the unit’s introduction to include captivating stories that highlight the importance of social skills and demonstrate that social skills can be learned. I added a “Student Planner / Diary” activity which encouraged students to set personal goals and monitor their progress. (Self-regulated learning promotes self-efficacy. I discuss this in the next section). Furthermore, I identified the need for strategic scaffolding based on students’ zone of proximal development (discussed later in this report). I also added the personal goal of intentionally “catching” each student doing something right during the first three days of class.

Specifically with respect to motivation, our students’ reports indicated that they learned a great deal about using theory and research in motivation as it pertains to instructional planning. Because we had written key principles to focus their attention on self-efficacy and intrinsic motivation, it wasn’t surprising that they tended to focus on these theories. In addition to self-efficacy and intrinsic motivation, however, students also learned a great deal about other theoretical constructs such as interest, goal orientations, attributions, and self-worth. By the end of the course, most students were able to use a rich theoretical and research-based vocabulary to describe, analyze, and refine their learning projects. Table 1 includes examples of students’ use of these varied motivational constructs within the context of their instructional projects.

Table 1: Exemplars of Students’ Ability to Describe Motivational Theory and Research Within the Context of Instructional Planning

I learned that students will be more likely to engage in learning tasks if they have a high sense of self-efficacy. Within my project there are many cooperative learning activities. I found that when students are placed in cooperative learning groups, they could receive positive messages from peers, and observe themselves and peers successfully completing tasks (Schunk, 1983, 1989). This can lead to higher self-efficacy, which can lead to students taking a more active role in learning. However, I found that my group work must be carefully structured because students could receive negative messages from peers as well, which could lead to lower self-efficacy.
I made the assumption that students would be most motivated to learn when the material is interesting to them and when they can select topics of personal interest. Based on my study of the cognitive factors that influence motivation, I learned that this assumption was correct. Students should find the classroom materials interesting and informative. Almost all students learn more when a topic is interesting; students with little background knowledge in the topic are especially likely to benefit (pg. 479). The personal product journal as well as the research paper that I have incorporated into my learning project, are examples of learning activities that give students choices in terms of writing topics. The students can freely discuss the conflicts as well as the information that is of their personal interest. During the discrimination activity, the students will be given the opportunity to experience conflicts and analyze how conflicts occur and ways of preventing them.

I assumed that students would be more motivated to learn about a Holocaust event and participate more fully in the small-group activity if they were required to teach the information to a group of their peers rather than create a formal presentation. When I structured this activity, I assumed that students would be more eager to learn the material if they knew that they would be acting as an expert on the topic for their peers rather than creating a formal presentation which I would be grading. This assumption is supported by research which indicates that people who know they are going to be evaluated on their performance have a lower sense of self-determination and, as a result, are less intrinsically motivated (Ormrod, 459). Formal assessment may undermine students’ intrinsic motivation. This is illustrated by a study by Benware and Deci (1984). Some students studied an article with the expectation of being tested on it, while others studied it with the expectation that they would have to teach the material to someone else. Compared with those in the first group, students in the second group enjoyed their learning experience more, found the material more interesting, and learned it in a more meaningful fashion (Ormrod, 460).

Self-worth theory teaches that an individual has “an intrinsic need to feel competent—to believe that they can deal effectively with their environment . . . to have a sense of self-efficacy” and acts to protect that need (Ormrod 415). Students’ ability to learn from and achieve in a certain task or activity is thus directly affected by motivation, which in turn hinges on perceived competence. Though many students may enter my classroom with a strongly realized sense of self-worth in the subject, still others may in fact harbor personal beliefs of low self-worth and competency. Past experiences and ingrained beliefs on reading and writing may severely hinder students’ ability to develop mastery-goals or motivate themselves at an intrinsic level. Again, open classroom discussions where everyone feels respected and able to participate will certainly help in this regard. Also, cooperative group activities will encourage peer interaction. Similar to the idea of scaffolding between higher and lower-level students, group activities will benefit students who want to learn but lack any intrinsic motivators through interaction with peers who might have a higher degree of competency and self-efficacy in the activity.

Fostering positive and productive attributions in students, so that they do not view the learning process negatively, is part of my job as a teacher (504). Studies show that students are more likely to learn if they attribute “successful learning” and performance to things over which they have control (504). This way, students will be optimistic about their future endeavors and performances (504). If students believe their achievement is out of their control, they may not continue to work as hard (504). In addition, in terms of failures, it is often more productive to attribute failures to ineffective strategies and to help students acquire better ones (505). If a teacher blames a student
who has exerted effort in the activity, they are “likely to conclude that they simply don’t have the ability to perform the task successfully” (505). As Ormrod states, as a teacher I can promote internal, controllable attributions in my classroom (505). One thing I can tell my students is that knowledge and skills are things that develop over time (505). In addition, I can give students numerous opportunities to improve assignments; several of my peer editing sessions and conferences allow students to work to improve their papers over a long period of time, giving them more than one shot to complete an assignment (505). I also aim to provide a noncompetitive classroom environment, since competition fosters the outperforming of others (performance goals) and not the individual development of each student (503, 506).

In my original planning of this learning project, I simply assumed that students would be willing and motivated to read and learn about *The Turn of the Screw*. I realize, after reading and studying these chapters on motivation, that some students will enter the project with vested personal interest and intrinsic motivation to learn about literary genres. Other students, however, may have little or no interest in the topic and may actually desire to avoid doing any work in relation to the project because he or she has more pressing concerns. I hope to motivate these students by creating opportunities to spark situational interest that will possibly lead to the student realizing that the learning project does hold some content that relates to his or her personal interests. Once students have a vested interest in the topic, he or she will be more likely to effectively learn.

By studying about self-efficacy, I have discovered ways that I could promote its development in my students and further fine-tune my project. One way to foster this development is to make sure that students slightly overestimate their abilities or competence (143). When students complete the goal setting sheet, they will be able to state their desires for their work in the class, and as a teacher, I will be able to make sure they believe in themselves. In reading about self-efficacy, I also realized that I needed to help students activate prior knowledge so that they have a higher self-efficacy for the Greek theater. If students remember what they have learned in the past, they in turn can relate it to the new material being covered in class. Higher self-efficacy can also be achieved by providing my students with constructive criticism, whether I provide it, or it is done through the peer evaluation sheets that I included in my project (144). Studies show that students’ self-efficacy beliefs are “enhanced when others praise good performance or provide assurances that success is possible” (144). Research also suggests that students have greater self-efficacy when they work in a group rather than alone (145). By working with other students to complete a project, called collective self-efficacy, students are able to complete an activity they might have had low self-efficacy for being able to complete on their own (145). I made numerous opportunities for group work in my project, especially in respect to more difficult tasks like creating a storyboard, after I read this section on self-efficacy.
Question 2: Do pre-service teachers develop the skills to use theory and research to make effective decisions of teaching practice?

Analysis of our students’ papers provided evidence that they developed the skills to use theory and research to make effective decisions of teaching practice. This skill development is evident in the language that they used to analyze their instructional projects, the theory and research they cited and discussed to justify their refinements and improvements, and the assumptions that they recognized, revealed, and challenged as they grew in their ability to demonstrate more effective decisions of teaching practice.

In many cases, students held onto their initial decisions about the learning activities within their projects. They did so because they were able to find justification for those initial ideas in their examination of theories of teaching and learning. What is notable is that they were able to plumb their original decisions and move beyond merely describing an activity, product, or performance to providing detailed justification of that decision using educational theory and research. Moreover, the students demonstrated that as a result of learning about motivation, they were able to make significant refinements and improvements to those initial ideas as they developed their projects. For example, an English education major initially proposed a journalism project in which students would work in groups to create a newspaper. Initial assumptions she identified at the beginning of the course included:

The activities of having the students visit a newspaper and researching various positions at a newspaper will give them "hands-on, real-life" experience to open their minds to possible future occupations.

Having each student have a specific responsibility with the creation of the newspaper will give the students a sense of responsibility, and when the newspaper is printed and distributed, pride in their final product, which everyone had a part in creating.

After studying theories of motivation and using them as a lens through which to examine her beliefs, she held onto her initial beliefs about the value of the newspaper project, but was now able to use a much more sophisticated process of supporting her beliefs with theory and research:

Students' learning will be most meaningful when self-efficacy is promoted. By using all of the above principles, the self-efficacy of the students will be promoted when the learners see their peers and themselves succeeding with the project. By creating articles and designing advertisements and layout, the students will prove, most importantly, to themselves that they can succeed at writing and designing. This then may open a door for the students outside of class to pursue extracurricular activities and hobbies that include writing and designing, thus promoting self-efficacy and the usage of the project's material outside of the project and class. Proving to the students that they are competent to complete a challenging project will also promote the students' self-efficacy. For example, "...we found that people are more inclined to engage in an activity when they believe they are or can become competent at the activity -- in other words, when they have high self-efficacy." (p. 457). Additionally, allowing the students to set their own goals in their departments will heighten the students' self-efficacy, thus promoting their motivation. For example, "[g]oal attainment results in
considerable self-satisfaction; it also leads to greater self-efficacy and higher standards for future performance." (p. 434).

Even though this student didn’t change her beliefs about the basic value of her project as originally proposed, she was able to use theory and research on motivation to improve and refine it:

For example, the instructor will distribute a rubric regarding the ways the students will be graded on during the project on the very first day the project begins. A tentative schedule will also be distributed, so the learners know what to expect each day. This had not been initially planned, however, providing students with a rubric and schedule will help to promote their motivation. Additionally, every class will begin with a five to 10-minute classroom discussion regarding any questions or concerns the students or instructor may have. This will promote positive affect by, “…sharing the particular questions and issues which [the students and instructor] themselves are concerned.” I chose to add this important aspect to the project, because promoting positive affect is crucial in promoting students’ motivation.

Another student, majoring in social studies, struggled with the “quantity” of learning tasks throughout his project. Using information processing theory, he originally decided he should make major changes to his project. Looking over the big picture of his project he wondered:

I wonder if I’m packing too much into a four week unit. Perhaps it would be more effective to single out one or two of these goals and provide concentrated, repetitive activities that would provide opportunities for deeper processing. On the other hand, each of these learning goals is important and interrelated.

What is the solution? The more I analyze Ormrod’s discussion of these issues, the more I believe that trying to accomplish all of these goals may be unwise. What good is it to race through all of my goals if the students don’t actually learn any of them? “Learning quickly does not always mean learning better” (Ormrod, 250).

There is another reason why it may be prudent for me to reduce the number of goals in my project. It is unlikely that the students will continue to practice their social skills if they do not attain a certain level of automaticity. “Automaticity occurs with little or no conscious attention or effort and requires little working memory capacity; it is, in a sense, ‘thoughtless.’ Controlled processes become increasingly automatic through repetition and practice (J. Anderson, 1983a; Cheng, 1985; Schneider & Shiffrin, 1977; Shiffrin & Schneider, 1977 cited in Ormrod, 240). In light of this research, my learning project needs to provide more opportunity for repetition and practice.

For example, if I reduce the number of learning goals, my students will be forced to focus their daily goal on a fewer number of social skills. This more intense focus will result in more repetition of the same skills which will more likely lead to automaticity.

Whereas the student’s reasoning is arguably sophisticated and demonstrates skills in applying research and theory to an instructional decision, note the growth in his ever increasing ability to refine his project even further, ultimately using intrinsic motivation theory to argue for the value
of holding on to his previously developed activities, but reorganizing them in a way that would lead to meaningful learning as well as foster a sense of self-determination:

In one of my previous progress reports, I indicated that my project was expanding to the point where I felt like it was too big—too much content, too wide and too shallow. However, as a result of my research on self-determination, my perspective has been further refined. In fact, it has given birth to a new idea: Instead of chopping activities out of my project, I might strategically organize the activities into various groups. Then I could let the students choose an activity from each group. This would increase their sense of self-determination and, therefore, their intrinsic motivation. (I have discovered that effective "student-centered" learning environments require careful, thoughtful preparation from the teacher. It takes a lot of work to provide an appetizing smorgasbord of healthy choices for the students. Each of these choices can still contain the learning goals—the "required nutrition"—of the project. But it takes a lot of hard work.)

In some cases, students significantly changed their projects. As a result of engaging in a theoretical analysis, they realized they had made some indefensible decisions of practice based on initially flawed or naïve assumptions. Their new awareness led them to make significant changes to their projects, by replacing major learning activities, products, or performances with new ones. For example, upon uncovering an invalid assumption, a secondary social studies major used theory and research to refine her assumption, resulting in significant changes to her teaching decisions about a government project:

I assumed that a role-playing activity would be a fun way to learn about government. However, after reading the section about interest, I found that my assumption is invalid. Ormrod states that students will be more motivated to learn if they have a personal interest in the subject. In order for students to enjoy the role-playing activity, and for it to be fun, students must have an interest in the subject of government. I am assuming that a majority of the students do not have a personal interest in government. Thus, I must promote their interest by relating government activities with things that they can relate to. For example, laws and regulations such as taxes when shopping, or out of their pay checks, driving age, music and the first amendment etc. In sum, I found that making an activity fun does not mean that it is interesting to the students, thus they will not set learning goals. Ormrod states if the students have personal interest in an activity they will sustain involvement in that activity over the long run (441). Ormrod also makes it clear that individuals that set learning goals instead of performance goals will do the things necessary to help them learn, and they will also continue to move forward after facing a setback. These attributes are essential for my students to complete the role-playing activity. For this reason it is necessary for me to make a few refinements to my project.

As a social constructivist would see it, they should have ownership of their learning. This way they would have relevant reason for learning about the government more effectively. Instead of making the first day of the week a lecture on a branch, I will let the students tell me what they think is important to know about the executive branch of the government. From there we will investigate these topics, and/or discuss them in class...The learning will be more authentic because they are deciding what is important or relevant to know.

Table 2 provides additional examples of how students used theory and research to refine their projects. What is noteworthy is the way that their words document increased skill in using theory and
research to make effective instructional planning decisions as well as to change them. Specifically, as they became increasingly competent with concepts of human motivation, the students tended to make changes to their projects in order to incorporate strategies and learning experiences focused on increasing self-efficacy, promoting intrinsic motivation, and enhancing personal interest.

Table 2: Exemplars of Students’ Skills in Using Theory and Research to Analyze and Refine Refine Their Projects

Right now, my project summary allows little room for change. After reading Ormrod’s discussion of motivation, however, I realize that I must add in some areas of choice. Students who “believe that they have some self-determination regarding classroom events” are more apt to develop “both intrinsic motivation and...internalized motivation” (Ormrod 478). I have already stated, in previous Progress Reports, that I am committed to a classroom environment in which I clearly communicate my goals and expectations with my students. I have also stated that I want to set up a routine so that students know what to expect from various activities. I now understand that these types of behaviors can help my students feel more in control, and they can thus help my students’ motivation. I also believe that if I add in a few choices, I can help my students feel even more involved in their learning process. For some activities, I can give the class a few options. Perhaps, on some days, I can ask the students if they would prefer to work in one type of group activity instead of another (perhaps a choice between small groups and a larger reciprocal teaching group session). Choices do not necessarily have to be relegated to my class’ group sessions. I can, perhaps, let students choose topics, every so often, when they complete their daily writing assessments. The choice would give students a feeling of some control, but the choice is not radical enough to allow students to pick “the easy thing;” in other words, I have no plans to allow students to have a “quiet reading day” instead of a group activity. The choices would reflect the values of the classroom and show my students that choices are available within certain limits, and those limits reflect what is important to my classroom’s values.

I assumed that in order for feedback to be meaningful and effective for students it has to be positive. However, Ormrod states that even negative feedback can be effective when it promotes competence and self-determination. If feedback provides information about how to improve the future, thereby implying that the individual can be successful eventually, it is likely to facilitate intrinsic motivation (Ormrod, 461). Based on this information, I have made a change to my approach to feedback. Along with positive feedback and encouragement, I will also offer negative feedback when needed to my students regarding their news stories. However, I will be very careful that my negative feedback provides information on how my students can improve their work, instead of conveying the message that they are incompetent or imposing the feeling of outside control (Ormrod, 461). I will ensure that my students realize that they definitely have to ability to improve and offer them support to help them be successful.

My new understanding about the role self-efficacy plays in student performance caused me to reevaluate my learning project and make refinements which will create a classroom environment that fosters self-efficacy. For example, I incorporated a group activity in which students collaborate on challenging tasks. I also intend to praise my students’ good performance and provide assurances when success is possible because I have learned that messages from others affect the development
of students’ self-efficacy. The promotion of self-efficacy is only temporary unless students’ efforts ultimately meet with success (Ormrod, 144).

I am immediately struck by the potential for increasing intrinsic motivation among students by introducing some additional possibilities for self-determination. As Ormrod explains in the text, “Numerous motivation theorists have proposed that people are more likely to be intrinsically motivated when they have a sense of self-determination.” (pg. 457) To do so, I could start off by allowing the groups to make a choice among several articles instead of using the same article for everyone. I could seek out articles that would offer varied points of view and appeal to different interests. Students could then choose an article that may be of more interest to them. Doing so would not only better satisfy issues of intrinsic motivation by addressing self-determination concerns, but it would then address interest, which is itself a form of intrinsic motivation (Ormrod, pg. 462). In this circumstance, this would most likely be considered a form of situational interest, except for those students who are generally interested in international relations or sociology. For these latter students, this alteration would better appeal to their personal interests (Ormrod, pg. 463).

I originally planned to allow students to choose their own paper topics, which I thought at the time was plenty of leeway for students to have an opinion and hand in their own learning. It was only after studying various [motivational] topics that I understood that students need to have more responsibility in their own learning. Not only will it reinforce the topics of current study, but it will help them to become more successful learners in the future. Self regulated learners are proven to set higher goals for themselves, learn more effectively, and achieve at higher levels in the classroom (Bronson, 2000; Butler & Winne, 1995; Winne, 1995a; Zimmerman & Bandura, 1994; Zimmerman & Risenberg, 1997). Study of motivation also leads me to believe that self-regulated learners would have intrinsic mastery goals, the type of goals that lead to more effective and worthwhile learning. After realizing that mastery goals and self-regulated learning would help students to become better learners in the long run, I attempted to include learning activities and motivational techniques that would encourage students to develop mastery goals and become more responsible in their own learning. Such efforts can be seen in my development of rules and grading rubrics with the students, encouraging students to move at their own pace with the research project, and offering scaffolding to those who need a bit more support in order to achieve at the expected high level.

Question 3: Do pre-service teachers develop the dispositions to challenge their assumptions, particularly with respect to self-awareness, reflection, desire, and intentions?

The third question guiding this phase of our study was perhaps the most exciting question to explore. Analysis of our students’ papers indicated that students were able to develop at least some aspects of dispositions for challenging their assumptions. Our students were able to reflect on their beliefs, and to become aware that their beliefs stemmed from their own personal experiences and background. For example:

When I began this course, I had several assumptions and ideas as to what made a good teacher. These assumptions were solely based on my personal experiences... A substantial amount of
comprehension occurred when I took a reflective analysis of the successes and failures of my own academic past. This analysis of my past through the lenses of the theories discussed in this class is what contributed to my most significant learning. I hope to use my past as a guide for my students’ future.

I believe many of my previous ideas came from my experiences as a university student and my comfort level with certain approaches to learning.

Traveling the road of revealing and challenging assumptions is essential to professional learning. Acquiring knowledge in this way is intricately woven into an individual’s personal beliefs and experiences.

Throughout my learning experience whenever I was grouped together with other students, we usually just counted off. I thought that this is what cooperative learning was. Randomly being placed with other students to figure out a common goal. Cooperative learning is now something that I view in a completely different light.

Our students also developed the awareness that their beliefs were important to their development as effective teachers. In some cases, they described that recognition using eerily similar terms, often citing metaphors of sight and enlightenment as they discussed the impact of their new learning on their beliefs. One student commented:

...the decisions we make as educators need to be supported by theory. If this is not the case ... misconceptions and inaccurate assessments can happen and affect the quality if any of learning that occurs in the classroom...That eye opening realization was of the greatest significance to me in that I see the impact of theory on learning.

Comments such as this one provide evidence that students have reflected on their learning and are aware of the importance of such reflection. This awareness is important, because as we argued in the introduction to this paper, the existing beliefs of pre-service teachers can provide a foundation for learning, and pre-service teachers can construct important new understandings of teaching by uncovering their own beliefs. Further examples of this metaphor can be found in Table 3.

Table 3: Metaphors of Sight and Enlightenment in Students’ Reflections on the Importance of Theory and Research

| Table 3: Metaphors of Sight and Enlightenment in Students’ Reflections on the Importance of Theory and Research |
| When we praise a student for an easy accomplishment they might assume that we did not expect them to succeed and conclude that they have low ability... It was an eye-opening revelation for me to learn that children become increasingly likely to interpret praise for an easy success as a sign of low ability... |
| Many times you hold a belief that you think is so definitively right, but as you look at it and analyze it from a theoretical perspective you realize how very wrong you may have been or realize that the reasons you thought justified why you were doing it were completely unfounded. I had misnomers about teaching and learning. Applying and working through each theoretical perspective has helped... |
me to uncover some of them, yet I know that I have much much more to do, but there has been a great deal of significant learning thus far.

This class has really enlightened my thinking about the teaching and learning process. It has been such an interesting course. The most exciting thing for me is that I have learned so many theories to back up what I already had previous assumptions about.

In these six weeks, I have come to understand myself, because I can better understand my own learning that includes its outstanding periods of breakthrough and insight...

I began my exploration of theories of teaching and learning with a skeleton of a learning project. Over the course of time, I have relished in the rebirth of this project, week by week, as I applied the theories and research which I investigated to my proposed project. The refinement and validation of my beliefs and thinking has resulted in an elaborate plan of action to be implemented, one day, in my classroom.

An important manifestation of developing this ability to uncover their own beliefs occurred as our students constructed new understandings of motivation. As they engaged in reflection and gained new awareness of their beliefs, we found that many experienced a fundamental change in their beliefs about motivation. Initially they tended to believe that motivation is something that resides in the student. Some of our students realized that this assumption basically absolves the teacher of responsibility—either the students “have it” or they don’t. As students gained knowledge of motivation theory, they came to a new understanding that motivation is complex and involves an interaction between students and their environment. As a result, they began to better understand the important role that teachers play in motivating students. For example:

Before taking this course, my conception of motivation was limited to a simple definition of natural effort and desire. In other words, I believed that motivation was largely a natural ability that one either possessed or did not. Such assumptions are of course false and will limit a teacher's ability to teach students. If a teacher believes that some students are naturally motivated while others are not, a significant number of them will be ignored as learners.

This idea that motivation does not lie solely with a student has truly made me rethink how I will approach teaching. I know now that if a student does not have the desire to learn the material there are many things that I can do.

[My initial assumption was that] students that don’t do well are not motivated...Labeling students as unmotivated can give a teacher the opportunity to absolve themselves of responsibility and allows them to justify giving up on the student. These chapters on motivation have given me more material to reflect upon as I consider the assumptions I have as a white, suburban woman preparing to teach in the intercity.

In addition to evidence that our students engaged in a process of reflection resulting in increased self-awareness and important new understandings, we also found evidence of students stating an intention
or desired goal to continue with this process of using theory and research to examine their beliefs. For example:

As a future educator I must continually examine, in light of theory and research, the assumptions I believe to be true concerning the processes of teaching and learning.

Applying and working through each theoretical perspective has helped me to uncover some of [my beliefs], yet I know that many more might lie buried within what I think I know and because of that I know that I have much much more to do, much more to learn and my goal is to continue questioning what I think I know.

Finally, we discovered that learning the process of using theory and research to examine assumptions and informing decisions of teaching practice can lead to an increase in students’ self-efficacy for teaching. Not only did our students come to understand the importance of fostering self-efficacy in their future students, but they also reflected on the personal realization that their own self-efficacy for teaching had increased. For example:

I have such a greater sense of self-efficacy about teaching than I did before. Because now I know that when I make an assumption about an area of practice I will be able to use the skills I developed in this class to research the theory to back up my actions. I now also know theories to back up my assumptions that I made prior to taking this course. I feel confident that in a job interview if I am questioned about my reasoning behind why I would choose to do something one way or another I will be able to support my ideas with relevant theories that relate to the teaching and learning process.

Overall, what was most interesting for me about this course was being introduced to the overall psychological perspective of human learning...While no theory is all encompassing, there has been valuable knowledge, tips and strategies that I have gleaned from each area. This knowledge as well as strategies developed from this knowledge represents my most significant learning. It would be these strategies that I will be able to incorporate into my classroom that are and will continue to be significant. This ability to implement ‘theory in practice’ over the last six weeks through the lens of my learning project has more importantly provided me with some degree of self-efficacy towards teaching in the secondary English classroom.

In summary, we believe that our students’ papers provide evidence that pre-service teachers can and do develop important aspects of dispositions toward revealing and challenging their beliefs about learning and motivation. Our students have developed an awareness of where their beliefs come from, they have engaged in a process of reflecting on these beliefs, and they have stated an intention to continue with this process when they become teachers. Furthermore, as a result of engaging in this process, they have developed a greater sense of self-efficacy for teaching.

Conclusions

We began our study by posing this question about changing pre-service teachers’ beliefs about learning and motivation: “Should we be asking different questions?” Our study has shown that many pre-service teachers enter their programs with valid beliefs about teaching. They can and do learn to reveal and question these beliefs, and in so doing, learn how to use theory and research to support
their beliefs and make more effective decisions of teaching practice. Our study has also shown that pre-service teachers can and do sometimes change their beliefs about learning and motivation, also leading to more effective decisions of teaching practice. These observations lead us to the conclusion that we may more profitably reframe an important question with which many teacher educators are struggling. Rather than asking whether or not we can change pre-service teachers’ beliefs, perhaps we should be asking: How can we help pre-service teachers develop the knowledge, skills, and dispositions to reveal and challenge their beliefs, and in so doing, help them learn to make effective decisions of teaching practice supported by theory and research? When students learn to use this process, resulting in an actual change in beliefs, then we have accomplished the goal of changing beliefs, a goal that has proven difficult to accomplish. However, we maintain that even when students do not change their beliefs, we can still make an important difference in their thinking about teaching. We have provided evidence that if students are willing to at least examine their beliefs, then they are better able to make effective decisions of teaching practice that have support in theory and research.

Having made these claims, we also urge caution in drawing conclusions. Although we found evidence for the development of knowledge, skills, and components of dispositions in some papers, we did not find them in all. Yet, we are cautiously optimistic and our optimism rests on two critical details. First, we have seen these knowledge, skills, and dispositions toward recognizing, revealing, and challenging personal beliefs develop during a six-week course—a phenomenon that we find noteworthy. One would not expect to find much growth in 42 days, particularly in a dispositional stance. And, second, we are optimistic not because of the number of students who demonstrated this growing disposition, but because of the intensity and quality of the evidence that we found when examining the words of those who had.

As a final point, whereas we find reason to be cautiously optimistic we are compelled to deepen our understanding of what is occurring so that we can further enhance, gauge and document it. First, we believe there is merit in continuing to examine ways to document evidence of the development of important dispositions for teaching and learning. Second, we believe it is important to explore long-term development of these dispositions, by following pre-service teachers through student teaching and into their own classrooms. Third, we believe that it is important to seek to better understand the relationship between changes in pre-service teachers’ beliefs and their decisions of teaching practice. Engaging in this kind of research will help us continue to refine the questions we ask as we seek to improve teacher education.
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