

# CITE

*Critical Issues in Teacher Education*

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### CRITICAL ISSUES IN TEACHER EDUCATION

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***Critical Issues in Teacher Education*** (CITE) is a double blind reviewed refereed scholarly journal of the Illinois Association of Teacher Educators. CITE will publish empirically based or original research articles, synthesis papers, book reviews, and special reports on topics of interest to teacher educators.

**The purposes of the publication of CITE are to:**

1. Stimulate research and scholarly activity on teacher education;
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3. Provide a forum for discussion of significant issues and problems in teacher education.

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# INTERNATIONAL STUDENT TEACHING AND THE EFFECT ON ENTRY/RETENTION INTO THE TEACHING PROFESSION

by  
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## Abstract

*This case study examined the effectiveness of a new model of feedback session based on videotape and reflection. Eight student teachers underwent this new model. Data collection included the analysis of interviews and reflection papers. The findings revealed, while in the interviews, that the student teachers were neither distracted nor concerned about being videotaped during their teaching, in the reflections, six out of eight participants indicated that they felt anxious to watch themselves in the video. Analysis of the participants' reflection papers and interviews identified three main outcomes in using this feedback model: specific and objective data, voice in the feedback process, and fun. Finally, issues of using videotape in teacher education programs and the use of this new model of feedback sessions were discussed.*

Educators have studied the issue of teacher attrition for well over 40 years. During the 1960's attrition rates were high, but fell to all time lows during the 1990's (Grissmer, Kirby, and Nataraj, 1997). The major concern today is that early career teachers continue to leave at higher rates compared to other professions (Certo and Fox, 2002). According to a report from the National Center for Educational Statistics (1997b), 7.4 percent of teachers left the profession over a 3 year period in the mid-late 1990's. The concern over teacher attrition has remained a major concern over the past 15 years which has led to an increased emphasis on induction programs, especially for first year teachers.

The greatest loss to the teaching force occurs during the first 5-7 years (Karge, 1993; Marlow and Inman, 1997). Specifically, 30 percent of teachers leave the profession within the first three years and 50 percent by year five (Johnson and Liu, 2004). This large exodus of teachers in the early years can cause huge financial hardships on school districts, due to a channeling of scarce resources toward recruiting, hiring and attracting new prospective teachers that also need early induction and training. The actual annual financial toll is over 7 billion paid by US school systems to fill the void left by teacher attrition. This financial drain negatively impacts quality education and student performance. Legislators and state departments of education that mandate high stakes testing and its impact on overall student performance and teacher effectiveness rarely take all these factors into consideration. High stakes accountability is a major contribution to the retention of teachers because of the impact on teacher performance and especially efficacy. Joined by causal factors faced by beginning teachers (Veeman, 1984) such as induction/mentoring (Smith and Ingersoll, 2004) and salary (Johnson and Liu, 2004) all provide examples in concluding that it is not just one dynamic, but a combination of factors that affects a teachers dissatisfaction and motivation to leave the profession early. There are also other attrition factors such as the economy and the changes in today's society, with the present generations' attitudes, about job skipping. Many of today's young people will change jobs several times before they reach the age of 30. The conclusion at this point is that with all the mitigating factors, there is no single solution to the overall problem of teacher attrition.

## Teacher Education's Role and Professional Development Schools

Although there are no simple solutions to teacher attrition, teacher education still has an obligation to prepare the most qualified, highly effective teachers to enter the profession as possible. With over half of the teaching force set to retire within the next decade (Johnson, Berg, et al, 2005) and the persistent challenges of retention (Ingersoll, 2003) it is critical that teacher education programs have entry/retention as a major goal. Research on PDS programs suggest that mentoring and induction programs can assist with the problem of attrition, (Johnson et al, 2005; Smith and Ingersoll, 2004; Strong, 2009), but will never totally solve the problem. Some research has indicated various flaws in mentoring/induction components (Wang, Odell, et al, 2008) and the ineffectiveness of such programs in urban areas (Isenberg, E., Glazerman, S. et al, 2009; Strong, 2009). More research is needed as to what teacher education programs can do during preparation to possibly reduce teacher attrition. Darling – Hammond (2003) suggests that the problem is not with the numbers prepared to teach, but keeping the teachers we prepare to enter and more importantly to stay in the profession.

With that said, many teacher educator programs in IHE's have developed Professional Development Schools (PDS's) as a vehicle to deliver pedagogical content, integrated into real world school settings. Although there is a need to increase research on the effect of PDS's during teacher preparation, some studies have shown that PDS's have the capacity to change teacher education, improve student performance and impact future teacher attrition (Houston, Hollis et al, 1999). Castle, Fox, and Souder, (2006) compared more than 90 pre-service teachers end of program assessments. The researchers concluded that pre-service teachers that had PDS experiences during teacher preparation performed significantly higher in classroom instruction, management and assessment. Between the years 1996-2004 (Latham and Vogt, 2007) compared graduates of elementary teacher preparation programs that had experiences in PDS's with those graduates that had traditional non-PDS experiences. Pre-service teachers that were given a PDS experience during teacher preparation were significantly more likely to enter teaching. In 2004 Kenreich et al, assessed over 100 pre-service candidates. Over a three year period following entry into the profession, PDS prepared teachers remained in teaching at a much higher rate following year one and year two, than those prepared traditionally. However, a study completed on graduates from 1996-98 (Reynolds, Ross, and Rakow, 2002) found no difference in retention rates between PDS and non PDS prepared pre-service teachers. Paese (2003) followed 48 teacher candidates and found no differences in retention rates two years after certification between those prepared with a PDS experience and those that were not. Significant differences did occur between the two groups on initial entry into teaching following certification. Finally, Fleener (1999) completed a very large study in Texas, examining attrition rates of 871 PDS vs. traditionally prepared graduates. After three years, there was a 6.7 percent attrition rate for traditionally prepared teachers, compared to only 2.1 percent for the PDS prepared graduates.

Generally the literature, although at times conflicting does suggest that PDS's as a delivery model during teacher preparation has the potential to impact teacher entry into the profession, but impact beyond the first year or two is inconclusive. More research is needed on experiences and delivery models for pre-service teachers during teacher preparation and impact from entry to the conclusion of the induction phase of teaching.

One area that needs further investigation is the impact of international programs (abroad student teaching) on entry into the profession and teacher

attrition. Abroad experiences have increased over the past 20 years, but research on its impact is very scarce. The significance of this study is the investigation on the impact of PDS abroad student teaching interns from a large teacher preparation program over a 14 week student teaching program. Half of the student teachers had a PDS experience during the semester preceding student teaching and the other half had the same experience, except half of student teaching (7 weeks) was in an international setting. Although the professional literature has an array of publications on the value of student teaching abroad, there is very little data that investigate impact, especially on entry into the profession and attrition through the first segment of the induction phase.

### Subjects and Setting

The subjects for the study were 199 pre-service elementary interns. All subjects did a PDS experience in an elementary school the semester prior to student teaching. The PDS experience was a 9 credit 2 day a week placement from 9 am to 4 pm. During student teaching, 118 of the interns did half of their student teaching abroad the second 7 weeks (New Zealand, London and Mexico) compared with 95 student teachers with the same preparation, with the only difference being all 14 weeks of student teaching were done locally in one (50 mile radius of the university) elementary school.

### Data Collection

Two instruments were employed during the study, one assessing teacher efficacy, and another assessing teacher stress. The Teacher Efficacy Scale (TES) developed by Gibson and Dembo (1984) was used to assess teacher efficacy. The TES is a 16-item questionnaire yielding two-scores, one from general teaching efficacy (GTE) and one for personal teacher efficacy (PTE). Factorial analysis of internal consistency reliability yielded Cronbach's alpha coefficients of .78 for the PTE factor and a .75 for the GTE factor. GTE as measure by the TES is multi-dimensional, establishing construct validity (Gibson and Dembo, 1984). The TES was used pre-post during the student teaching semester.

The GTE score measures the degree to which teachers, in general, believe that they can have a positive impact on students, despite various environmental and social constraints. An example of a Likert-type question on the TES; "the amount a student can learn is primarily related to family background" the lower the total score on teacher efficacy scale the higher the general efficacy for the individual. The PTE score measures the degree to which an individual believes he or she can personally elicit positive change in students. An example of a question on the PTE section is "Do I have a positive impact on student learning?" Higher scores in this area of the TES illustrate a higher degree of personal teacher efficacy.

Teacher stress was measured by using selected variables from the Teacher Stress Scale (TSS) developed by Pettegrew and Wolf (1982). Not all variables were used because they were not applicable to student teachers i.e. administrative support. The subscales measured two general areas of teacher stress and role related stress, ambiguity, role overload, role preparedness and task based stress (job satisfaction, life satisfaction and illness symptoms). Low scores reflected higher degrees of role overload and illness symptoms. High scores on the Likert-type scale signify higher degrees of role ambiguity, role preparedness, job satisfaction and life satisfaction. Pettegrew and Wolf (1982) following statistical analysis for reliability and validity, including good internal consistency for all stress variables met standards for productive and construct validity.

Role related stress concerns are the degree of fit between a teacher's

expectations of the teaching role and the actual work-related experience of fulfilling that role. Task-based stress concerns are problems with a variety of tasks that the teacher must perform. In addition to their validity and reliability as measures of stress and efficacy, both scales have been used in the majority of studies conducted in this area since their validation. The TSS was sent to student teachers pre/ post during the 14 week student teaching semester.

Another short survey was also sent to subjects prior to the beginning of the next school year to ascertain if they had entered the teaching profession and again a month after the conclusion of the first year of teaching. A final survey was sent to all teachers at the beginning of the second year to ascertain if they were still in the teaching profession.

### Analysis

Data analysis was completed through the use of a two factor MANOVA with repeated measures by product (Traditional Student Teacher vs. Abroad Student Teachers) and by test (pre/post). A two-question survey was also sent to each group during the summer after student teaching and again following the first full-year of teaching. Questions on the survey were on entry/retention and factors that led to that subsequent decision i.e. "will you be entering the teaching profession this fall as a first year teacher"? "What factors influenced your decision"? "Will you return for a second year of teaching"? "What factor(s) influenced that decision"?

### Results

There were no significant differences between both groups on any stress or efficacy variables at the entry of student teaching. At the conclusion of student teaching there were significant differences between the two groups on Personal Teaching Efficacy in favor of the abroad group of student teachers and in General Teacher Efficacy. The abroad group of student teachers also had a significant change in a positive direction when compared to the traditional group on the stress variables role overload and role preparedness (See Table 1).

**Table 1:** Difference Between Abroad and Traditional Student Teachers

Variables	Trad - St Pre	Abr - St Pre	Trad - St Post	Abr - St Post
Role Ambiguity	19.4	19.0	19.5	18.8
Role Overload	12.2	13.3	11.9	10.9**
Role Preparedness	21.9	22.0	20.9	23.4*
Job Satisfaction	22.8	23.9	22.4	23.3
Life Satisfaction	20.0	20.3	19.4	20.2
Illness Symptoms	9.2	9.4	9.0	8.4
Personal Teacher Efficacy	43.1	43.2	43.0	45.4*(**)
General Teacher Efficacy	23.2	22.8	24.0	22.6*

\* $P < .05$  between

\*\* $P < .05$  within

When investigating entry into the teaching profession, 91 percent of the abroad student teachers entered teaching following certification, compared to only 79 percent of the traditional group of student teachers. When looking at retention rates following year one, the traditional group lost 26 percent (20 of 78) compared to only 91 percent (8 of 91) for the abroad group. This translates into a 91 percent retention rate for the abroad group compared to only 74 percent for the traditional

group of student teachers. From the original cohort, the traditional group had only 59 percent left in teaching entering year 3, compared to 83 percent from the abroad group (See Table 2).

**Table 2:** Results of Entry/Retention

Variable	Trad - St	Abr - St
Enter Teaching	78/99 (79%)	91/100 (91%)
Exit Teaching 2 yrs.	20/78 (26%)	8/91 (9%)
# Remaining After 2 yrs.	58/78 (74%)	83/91 (91%)
# Remaining from Original Cohort	58/99 (59%)	83/100 (83%)

### Discussion and Recommendations

The results illustrate that the two groups entering student teaching had no significant differences in both stress (TSS) and efficacy (TES) variables. Both groups had the exact preparation or elementary teacher certification which included a one semester PDS experience in an elementary public school. Differences began to surface as a result of their student teaching. Both groups had similar student teaching the first half of the semester, but the international student teaching group spent the last 7-8 weeks abroad completing student teaching in either, London, England, Auckland, New Zealand or Cuernavaca, Mexico.

As a result of completing student teaching abroad as illustrated in post-test results, the abroad group of student teachers felt more prepared than the traditional group of student teachers. As a result this translated into higher efficacy, both personal (PTE) and general (GTE) for the abroad group of student teachers. It is assumed that the international student teaching experience provided a higher degree of personal confidence in teaching (PTE) and a feeling that the negative constraints that surround teaching had less of an impact on teachers (GTE). This confidence level not only led to lower levels of stress and a higher degree of efficacy for the international group when compared to the traditional group, but also led to significant changes from pre-post within the international group of student teachers (role overload and personal teacher efficacy).

Self reporting data on teacher efficacy is sometimes suspect, but higher efficacy does correlate with teacher effectiveness (Berman and McLaughlin, 1977; Paese and Zinkgraf, 1991). The results are also consistent with previous research findings that positive experiences can lead to higher perceptions of efficacy, teacher confidence, greater student achievement/outcomes and entry/retention rates (Gandara et al, 2005; Tschannon-Moran et al, 1998; Woolfolk, Hoy, and Spero, 2005). It should also be noted that the traditional group of student teachers did not have major increases in stress and a decline in efficacy as a result of student teaching. This was also positive finding in this study. A major goal for teacher preparation programs is for pre-service student teachers to not have a decrease in efficacy as they exit teacher preparation and enter their first year of teaching!

Speculation and data analysis illustrate that there was an impact on the international group of student teachers experience that illustrates differences on entry and retention. The higher efficacy scores of the international group of student teachers could have led to the higher entry into the profession and retention rates when compared to the traditional group. The significant risk undertaken by the interns, along with the confidence gained upon successful completion are probable reasons for higher efficacy scores which can impact entry/retention. The international group of student teachers may be more committed to teaching, especially following a

successful abroad experience that also comes with a greater monetary costs.

Thus on the surface, speculation is that successful student teaching abroad could be a major factor for higher entry and retention rates along with increased confidence and commitment as illustrated by higher teaching efficacy. There can be no claim of external validity because of all the variables that cannot be controlled, such as the first half of student teaching (placement site, cooperating teacher, etc.). It is recommended that further studies be conducted on student teaching abroad programs, possible impact on entry/retention (larger sample of subjects) and the value added component, especially during the induction phase. Teacher attrition is a significant problem for the profession of teaching and its impact on school districts and children! Program components that can make a difference on increasing entry into the profession and reducing teacher attrition are warranted!

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## VIDEOTAPE AND REFLECTION BASED FEEDBACK TO STUDENT TEACHERS: A CASE STUDY

by  
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### Abstract

*This case study examined the effectiveness of a new model of feedback session based on videotape and reflection. Eight student teachers underwent this new model. Data collection included the analysis of interviews and reflection papers. The findings revealed, while in the interviews, that the student teachers were neither distracted nor concerned about being videotaped during their teaching, in the reflections, six out of eight participants indicated that they felt anxious to watch themselves in the video. Analysis of the participants' reflection papers and interviews identified three main outcomes in using this feedback model: specific and objective data, voice in the feedback process, and fun. Finally, issues of using videotape in teacher education programs and the use of this new model of feedback sessions were discussed.*

Student teaching is often considered the most critical period in the teacher preparation process. During this phase, student teachers have an opportunity to truly immerse, and discover themselves in the role of teacher. Here they accumulate, develop, and consolidate new skills and experiences, and interact with new sets of situations (Caires and Almeida, 2005; Meijer, Graaf, and Meirink, 2011). According to Meijer, Graaf, and Meirink (2011), during student teaching, they also often suffer from profound practice shock. This shock in itself seems to characterize the complicated and emotional challenges of student teaching. Identifying effective methods of providing feedback during student teaching in order to help them develop confidence during that time, and to arouse professional passion is therefore extremely necessary.

However, Brandt (2008) observed that, in many cases, the outcome of feedback is tension or worry. One of the reasons to the failure of feedback sessions is the confusion of which feedback approach works best for student teachers. According to some researchers (Carrol and Goldberg, 1989; Fluckiger, Vigil, Pasco, and Danielson, 2010; Karen and Lindsay, 2011), an effective feedback process must be listener-centered and democratic. During such a process, the cooperating teachers or university supervisors act as facilitators helping the student teachers identify their problems, and brainstorm for solutions to the problems instead of assuming the role of experts or problem solvers. This process ensures that the authorities and responsibilities of professional improvement lie with the feedback recipients.

In contrast, other researchers asserted that the collaborative feedback process is not always effective in all cases. For example, Wergin, Mason and Munson (1976) confirmed that an expert role feedback process is more useful for newcomers. Similarly, Hunter (1984) stated that a direct communication style is a stimulant for introducing neophytes into the teaching profession because student teachers are inexperienced and need the expert advice for their development. The belief behind this view, according to Glickman (1985), is that the university supervisors know better than the student teachers what needs to be done for instructional improvement.

Pajak (2003) explained that each approach seems plausible and sound until the other is taken into account because both of them are consistent within their own internal logic. However, separately, the philosophies behind them are dramatically opposed. In fact, there has been very little research on this controversial issue. More research is needed to shed the light on the problem for supervision theorists and practitioners to implement into their practice.

### Theoretical Framework for the New Model

Taking into account the differences between the two approaches to giving feedback, we attempted to implement a new model of feedback provision based on videotape and reflection. We called it "*videotape and reflection-based feedback model*". This new model was oriented to the collaborative feedback because it offered student teachers chances to have their voices in the process. Both the opinions of the student teachers and supervisors were objective, based on what they observed in the videotape and what they reflected in their writing rather than on what they subjectively perceived.

The first component of this model is based on student teachers' reflection. As McIntyre and Byrd (1998) discussed, the development of pre-service teachers involves experiences, self-examination and reflection. The emphasis on reflection in teacher education is derived from the assumption that teaching is a complicated activity as teachers are involved in continual problem-solving and decision-making. Actually, researchers have long realized the significant role of reflection in teacher development (Brandt, 2008; Nagel, 2009; McIntyre and Dangel, 2009; Pultorak and Stone, 1999; Tobin, 1987). Loughran (1996) argued that reflection and learning are inter-related and that reflection can contribute to the development of the teachers' skills, habits, and attitudes necessary for their self-directed professional development. Similarly, Pultorak and Stone (1999) asserted that self-reflection has the potential of moving student teachers toward a refined description of how they transform from apprentice thinking to expert understanding.

The second component of this model is based on videotaping. In fact, the use of videotapes as a learning tool is not foreign to teacher educators. It has actually been applied into teacher education programs since the late 1960s and early 1970s (Santagata, 2009). According to Acheson and Gall (2011), videotapes are among the most objective observation techniques. They allow student teachers to see themselves as their students and university supervisor see them. They can pick up a great deal of what is happening in the classroom from watching the tapes. Sherin (2004) indicated that as technological capabilities expand, teacher education programs will probably continue to rely on videotapes as an important means of instruction and evaluation.

Nonetheless, many researchers were skeptical about the use of either videotape or reflection in pre-service teacher training. Linman (1980) concerned that the use of video recordings in micro-teaching training techniques may create 'cosmetic' effects on the entire training scheme, in which the student teachers who are aware that their lesson are being videotaped will behave or perform artificially. This makes them spend less time on how to teach effectively but consider more of their appearance on the video camera during their teaching. Jensen, Shepston, Connor and Killmer (1994) observed that pre-service teachers were often hesitant to be videotaped or even audio taped even when they are encouraged by their supervisors. Other hurdles to the use of videotape in student teaching are the cost of technology and a certain level of technical competences a supervisor needs to achieve in order to conduct videotape.

Other researchers (Hall, 1985; Zeichner, 1987) concerned that an emphasis upon reflection too early in student teacher preparation may confuse them. Reflection can be challenging for student teachers to sustain because they may consider it as an arcane and useless task. They may see achieving the concrete technical skills and content knowledge more important, especially early in their training program.

Differently, several other researchers took another approach to examining the influence of videotape on the quality of reflection papers by student teachers or the combination of both of them on student teachers' professional development. In a study with 28 participants who were involved in pre-service practicum, Jensen, Shepston, Connor and Killmer (1994) concluded that by watching themselves in the videotape, preservice teachers could see and hear their teaching performance, which enabled them to reflect on the quality of their work. The study also indicated that preservice teachers' focused observations and reflections of their own teaching performance resulted in more reliable and useful information than their efforts to self-evaluate their overall teaching performance. In a study with quite a small sample of three participants, Armstrong (1999) found that the videotaping and discussion process allowed student teachers to acquire independence, personal practical knowledge of teaching, and boost their reflection.

In a counterbalanced design study, Welsch and Devlin (2006) conducted a study with 37 student teachers to compare the effectiveness of video-based reflection versus a memory-based reflection. The result showed that students were more precise in providing evidences related to their learning and the effectiveness of teaching methods when watching the videotape versus recalling from memory. Participants also indicated that watching the videotape improved their thinking of what they would do differently in the classroom.

In conclusion, researchers had different views on the impacts of videotapes and reflections on student teachers' performance. Although several studies confirmed the positive impacts of using videotape on enhancing student teachers' performances or increasing the quality of their reflection, a review of literature pointed out that neither of them was used in feedback sessions. To that end, this case study was designed to examine how the use of the combination of videotape and reflection helped improve the quality of feedback sessions. Specifically, the study sought to answer the following questions:

- *How do the student teachers feel when being videotaped in the classroom?*
- *What do the student teachers gain after they have gone through the new process of feedback provision?*
- *Is the new process of feedback provision more effective than the feedback sessions they underwent?*

### Method

Eight student teachers participated in this case study. We implemented the new feedback process with five student teachers in Spring semester 2011 and did the same procedure to another three student teachers in Spring semester 2012. Among the eight, six were white female elementary student teachers and two were white male secondary student teachers. They were all between the ages of 22 and 24 and were earning their first college degree at a Midwestern public university.

### Data Collection and Analysis

The researchers communicated with the participants about the procedure of videotaping and writing reflections two days before the student teaching. Specifically, the procedure included:

- The observer or student teacher videotapes the teaching process.

- The student teacher receives the recording to look back and reflect on his or her teaching performance in various areas suggested by the supervisor, such as student-teacher interaction, verbal flow, selective verbatim and global scan.
- The student teacher submits a written reflection to the supervisor.
- The student teacher and supervisor set up an appointment to watch the recording together to analyze the strengths and weaknesses the student teacher has in that lesson.

Among eight participants, the researchers videotaped six of them in the classroom while they were teaching. Instead of using expensive camcorders and audio recording accessories, the researchers simply used a cell phone-sized Flip camera to record the student teachers' performances. The researchers only stood at the back of the classroom and held the camera by one hand to shoot the performances of the student teachers. Right after the teaching was completed, the researchers made a copy of the videotape for the student teachers to store in their classroom computer or their own computer. Two other participants videotaped themselves in their classroom. They also used the same Flip camera but hooked it on a tripod at the back of the class.

The researchers did not instruct them how to do it, but they themselves managed to videotape their teaching. One day after they completed, we came to their classroom to receive a copy of their videotape. Actually by comparing the videotape quality, we did not see significant differences between videotapes by us and those by the two student teachers. The only difference between these two types of videotapes is that those conducted by us captured class activities in more details than those by the student teachers. While we could zoom in and out the Flip camera to capture interactions between the student teachers and their kids when we wanted, the Flip camera fixed on the tripod only recorded classroom activities without any focus.

The data collection involved two phases. The first phase included structured interviews with eight student teachers within a week after they completed the described procedure. The second phase was to examine participants' written reflections, one of the components of the feedback session, to compare them with what they had said in the interview.

Analysis began with the transcriptions from the interviews and sections were highlighted that seemed relevant to the purpose of the study. Common themes were noted in the margin and codified. We used the same procedure with the student teachers' written reflections. We read through the reflections, identify common themes and then compared them with what we found in the interviews.

### Findings

The first guiding question was "*How do the student teachers feel when being videotaped in the classroom?*" The participants' responses in the interviews indicated that they were neither distracted nor concerned about being videotaped during their teaching. Kim, one of the student teachers, stated, "I forgot I was being taped when I was teaching." Similarly, Emily said, "I did not think about it. I was busy with the kids at that time, but after the lesson, yes, I thought about it, wondering how I performed." These responses from the interviews removed concerns by researchers about the unwillingness and anxiety of the student teachers when being videotaped. It is also noteworthy that none of the participants in this study had been videotaped before in their student teaching.

However, in the reflections, six out of eight participants indicated that they felt anxious to watch themselves in the video. Linda, another student teacher, wrote,

"Before reviewing the video, I was a little nervous to see how I actually look while teaching. Do I make funny faces? Do I show any nervousness?"

In the same vein, David wrote,

"Never having been videotaped before, I was apprehensive. To discover that your perception of yourself and behaviors may be different than what others observe is a little nerve-racking. As I pushed "play" to the 45-minute video, my initial reaction went something like this: Do I really sound like that in real life? Wow! I definitely bite my lip when I don't know what to say! Am I really that calm and quiet and collected in the classroom?"

This finding in the student teachers' reflections resonates with Acheson and Gall's (2011) observation that when first exposed to a videotape of themselves, teachers tended to focus on the "cosmetics" of their performance such as physical appearance and voice quality.

The second guiding question was "*What do the student teachers gain after they have gone through the new process of feedback provision?*" Common themes in the interview transcripts and student teachers' reflections were obtained to identify outcomes which the participants indicated. The first outcome was specific and objective data. Diana stated, "It is awesome to be able to see what is really happening in my teaching and reflect on it to gain an in-depth understanding of teaching."

Susan, one of the student teachers, said in the interview, "No more wondering if he [supervisor] describes exactly what I do because I sometime saw him busy talking with the CT [cooperating teacher] in my teaching. I can see my performance and reflect on what I did ... I received more specific comments in the feedback meeting than I did before. Before that, you know, it was always one word or one sentence like you doing fine in this. You can work a little bit on that."

In the reflection, Kim wrote:

"I realized that I repeat many of the same phrases and instructions word-for-word. While this is not inherently a bad habit, I could work on increasing my vocabulary and explaining concepts in various ways to connect with more students. I also became very aware of the number of instances that I say the word "okay." I had no idea that I said "okay" so often, particularly when transitioning from one part of the lesson to another."

This outcome is vital to the feedback process because, as suggested by Acheson and Gall's (2011), student teachers are willing to accept the consequences of even negative evaluation if they know the data on which the evaluation is based and accept their validity. This finding also reinforces our preliminary finding in the first phase of this study. The student teachers expected to have more specific feedback to help them improve their teaching performance. They expected to receive specific analysis and advice on their strengths and weaknesses rather than general comments or appraisals.

Another outcome indicated by the participants was that student teachers had their voice in the feedback process. Susan stated that "I analyze myself critically and can comment or defend why I do this activity, things that I couldn't do before when we had post-lesson conference." Similarly, Kim said, "It's a two way conversation. I can explain what I did. And as you also may notice, I talked a lot." Finally, David stated,

"I think the post lesson conference is to help reaffirm what I said in my reflection....yes, sometimes, you are not sure if what you see and think is appropriate or not, but when we watched the tapes together and analyzed it, I could talk about my ideas why I did this or that."

The final outcome of the process was having fun. According to participants, they had fun undergoing the whole process. Emily said, "A little nerve-racking, but fun to see myself as the center of attention on the screen." Similarly, Susan replied, "It's kind of fun to watch me teaching. You know, I laughed so much when I watched it again for reflection... I don't mean I look silly. You know, I enjoy it." Kim stated,

"It is one of the most interesting and worthwhile experiences I have in my student teaching. In reflection, by the time the video came to a close, I had an entire two pages of notes scribbled down, including things done well, items to improve, and observations that I had failed to notice about myself prior to the lesson."

According to psychoanalytic theory, introduced by Spencer (as quoted in McGhee, 1983a), getting people to have fun is an effective way of releasing nervous and built-up tension because they all have certain areas which they find uncomfortable, fearful, and embarrassed. This is especially true to the student teachers who are novices to the teaching profession and who often suffer from a profound practice shock. The fact that they had fun upon taking this process is valuable.

In all, among those three outcomes, the first one, specific and objective data, is anticipated because several previous studies (Acheson and Gall, 2011; Sherin and van Es, 2009) showed. However, the remaining outcomes are not found in any other studies. Especially, the last outcome, according to the participants, which they have fun in the process is quite unexpected to us.

The third guiding question addressed whether the new process of feedback provision is more effective than the feedback sessions they underwent. In the interviews, all of eight participants indicated that although it took more time and challenge to complete the new feedback process, this new process offered them insight into many perspectives in classroom managements that neither their supervisors nor they themselves recognized before. According to them, undergoing this new process of feedback provision, they were more open to talking with the supervisor than before and made more teaching adjustments. For example, Daniel said that after watching the videotape and talking with the supervisor about his performance, he felt more confident in the next teaching day. Kim replied that the supervisor's opinions made more sense to her after she watched her own teaching performance and reflecting on it.

This finding confirms Sherin and van Es's (2009) observation that watching and reflecting on videotape fostered teacher learning. In addition, it helped to reinforce their current performance. On average, each of the student teachers' reflections contained five phrases "I should" or "change" in the interviews and reflection papers. For instance, Kim wrote in her reflection.

"The videotape also made it apparent that the ELMO projector very clearly blocks the view to the front of the room from students in the back. For future reference, I should rearrange the room and desks so students can see around the ELMO."

Similarly, Diana reflected,

"I became aware that I sometimes answer my own questions, without taking feedback from students. [...] It was discouraging to

see that several students showed me their proud work, and I merely glanced over the shapes that they had made. I think that speeding up the pace of the lesson may have helped alleviate some of the classroom chit-chat and off-task behavior."

In the interview, Daniel said,

"It [feedback procedure] burned me out, but yes, very useful and effective process. I think about it a lot after the session, figuring out how to do better the next day."

### Conclusions

We draw several conclusions from this case study of a video and reflection-based feedback process in student teacher supervision. In the new procedure, the feedback sessions were a continuous learning process in which student teachers took on several responsibilities. They analyzed themselves by watching their teaching performance in the videotape, reflected on their performance and compared their own observation with their supervisor's comments in order to improve their performance. Although, as indicated by the participants, this feedback process took more time and effort than their previous feedback sessions, student teachers learned a lot from it. They identified three main outcomes in using the new process of feedback provision: specific and objective data, voice in the feedback process, and fun.

This case study has several implications. The first implication is that teacher education programs can establish a new procedure of classroom observation based on the findings of this case study to improve the student teachers' performances. Instead of having the university supervisors attend the classroom observation every time, student teachers can videotape their teaching performance and send the video to their supervisors. This can save time and money for the programs and the supervisors.

The findings of the study also indicate that university supervisors should collect as many specific observable data as they can to make the feedback sessions productive. This implication applies not only to the field of education but to other fields which involve feedback sessions. People tend to believe more in what they see than in what they hear. The student teachers should be provided with opportunities to take more control in the feedback sessions.

The findings of this study also partially answer the question as to which approach to feedback provision is more effective. Our feedback model is geared to the cooperative feedback approach in which supervisors acted as facilitators helping the student teachers identify their problems, and brainstorm for solutions to the problems instead of assuming the role of experts or problem solvers. Our findings showed that being able to have their voices in the feedback sessions offered the student teachers opportunities to grow professionally. They did not consider themselves as subordinates, but classroom teachers practicing their profession.

Our use of simple videotaping technology in this study actually had its own purpose. We intentionally selected an inexpensive Flip camera to videotape the teaching performance rather than costly professional camcorders. The design of this Flip camera is simple enough for almost everyone to use with just a click. The user can hold it with one hand or gets it fixed on a tripod. Even though we used such a low-end product and were not trained to videotape teaching performances before, we still had high quality videotapes compared with available videotapes for teaching training programs.

The quality of videotapes in our study really cleared the concerns by several researchers and educators about the expenses of using videotaping

technology in education. It is not necessary to equip the teachers with expensive high- end technology and accessories to do the recording job. A simple inexpensive camera can be effective. It also does not require technological expertise to handle the recording process. Our untrained student teachers could manage to do by themselves. All these factors are important for teacher preparation programs to consider including videotaping in the student teaching without concern about cost and technology competences.

In addition, teacher certification exams in many states are currently requesting teacher candidates to submit a twenty to thirty minute videotape of instruction with their students in classroom. This requirement pushes teacher preparation programs to get their graduates familiar with videotape as soon as possible. They need to know how to conduct videotaping for themselves not only for the certification purposes but also for the purpose of professional development. By having students exposed to the videotaping process early in the program including how to conduct videotaping, analyzing and reflecting, graduates from teacher education programs will be well prepared to enter the job market.

### Study Limitations

One of the limitations of this study is the small numbers of participants who volunteered to participate into the study. As for future research, longitudinal studies of this process of feedback provision with more participants should be explored to determine ways to improve the process and to ensure high quality student teaching experiences.

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## THE COOPERATING TEACHER: THE KEY PLAYER IN TRANSFORMING TEACHER EDUCATION THROUGH CLINICAL PRACTICE

by  
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### Abstract

*In 2010, an NCATE Blue Ribbon Panel (2010) laid out a blueprint for the future of clinical experiences that looks radically different from the present. Key players in this transformation will be the university supervisors and the cooperating teachers who supervise field experience students. This article provides a description of the NCATE Panel's vision of clinical educators' preparation and roles. It then contrasts the panel's vision with present state standards for those who perform supervisory roles in Illinois and provides examples of selection criteria for university supervisors and cooperating teachers at four public Illinois universities. In the final section of the article, the authors suggest how teacher educators might begin to narrow the gap between the current status and the NCATE panel's vision. We describe a longitudinal qualitative research study that has helped teacher educators at one Illinois institution to analyze and address the strengths and deficiencies of preservice supervision.*

In a report called *Transforming Teacher Education through Clinical Practice: A National Strategy to Prepare Effective Teachers*, an NCATE Blue Ribbon Panel (2010) laid out a blueprint for the future of clinical experiences that looks radically different from the present. Key players in this transformation will be the university supervisors and the cooperating teachers who supervise field experience students. In this article we begin with a description of the NCATE panel's vision of clinical educators' preparation and roles and how research needs to inform future requirements. Next, we contrast the panel's vision with present state standards for those who perform supervisory roles in Illinois. We provide examples of selection criteria for university supervisors at four public Illinois universities and, where available, for their cooperating teachers.

In the final section of the article, we suggest how teacher educators might begin to narrow the gap between the current status and the NCATE panel's vision. We describe a longitudinal qualitative research study that has helped teacher educators at one Illinois institution to analyze the strengths and deficiencies of preservice supervision and begin to restructure in ways to promote exemplary supervisory practices.

### The NCATE Panel's Vision

The NCATE Blue Ribbon Panel is clear and consistent on several points in their Executive Summary. First, they identify clinical preparation (also called *field experiences*) as "one of the three components of teacher preparation that are likely to have the highest potential for effects on outcomes for students." That puts clinical preparation in a triad with content knowledge and the quality of teacher candidates. Second, they document and give credit to many programs strong on clinical preparation. They follow this praise, though, by noting that exemplary programs are a "cottage industry," an exception rather than a norm. And finally, they raise concerns about the lack of a research base or consensus on what effective clinical

preparation looks like and what it takes to prepare, select, and certify effective mentors.

In their *Status of the Field* section, the panel describes clinical preparation as poorly defined and inadequately supported, noting that the requirements for student teaching in most states are vague. Even less clear are standards for mentor preparation or compensation. They describe the status quo as a situation where cooperating teachers assume supervisory roles as extra work, with little or no compensation in the form of training opportunities, compensatory time or remuneration. While giving about half of the states credit for requiring training of mentors, they mute the praise by noting that the states are not specific about what mentoring roles and requirements should be.

In the *Mapping the Shift* section, the report contrasts the current silo model of separate responsibilities with a shared model. In the former, university academic faculty take on roles associated with content and pedagogical knowledge, while clinical supervision is often done by untrained graduate students and P-12 faculty. In the latter model, the roles are shared between academic faculty and specially prepared clinical faculty drawn from preparation program and P-12 schools. In support of the move to the shared responsibilities, the panel advocates research on new staffing models that will support clinical preparation and lead to increasing differentiation in roles for educators. The report makes a case for the development of rigorous criteria for the preparation, selection, and certification of clinical faculty and mentors.

A culminating recommendation in the Executive Summary is that state, federal, and philanthropic organizations fund research to develop, improve, and evaluate new models of clinical preparation. In the Task Force on Clinical Faculty section, they also advocate funding and collaboration with professional organizations to identify the specific skills required for working with candidates and new teachers.

The Report provides recommendations for promising practices that individual institutions might explore. Their review of the research and the status quo makes a strong case that, at a minimum, clinical educators should be experienced, highly competent, and possessed of the skills and knowledge to help others learn to be effective teachers. They provide some examples of what clinical educators should know and be able to do in order to attain such qualifications. These include knowledge of adult learning; mentoring strategies and how to use them; access to a portfolio of assessment approaches; and an abundance of personal skills for building trust, rapport, and communication with candidates. In the 10 Design Principles for Clinically Based Preparation, the panel is specific about other skills clinical supervisors need. Systematic observation and feedback skills are prominent. Principle #3 describes the requirement that evaluation of candidates be based on "data from structured observations of candidates' classroom skills by supervision teachers and faculty." Principle #5 stresses the need for lots of opportunities for feedback in a collaborative culture and notes that candidates need to expect "rigorous peer review of the practice and their impact on student learning."

### Present Requirements for

#### University Supervisors and Cooperating Teachers in Illinois

An examination of qualifications for preservice supervisors at public Illinois institutions provides a marked contrast to the 2010 Blue Ribbon Panels' vision. The Illinois State Board of Education uses National Council for the Accreditation of Teacher Education's (NCATE) Professional Standards for the Accreditation of Teacher Preparation Institutions (2007) as Illinois State Standards for Teacher Education. Several sections in the NCATE standards pertain to supervisory

qualifications. Standard 3, Field Experiences and Clinical Practice, specifies that the unit and its school partners need to design, implement, and evaluate field experiences and clinical practice so that teacher candidates and other school professionals develop and demonstrate the knowledge, skills, and professional dispositions necessary to help all students learn. A subsequent section under Standard 3, Field Experiences and Clinical Practice, characterizes two major responsibilities as shared between the university and PK-9 school partners: creating opportunities for candidate learning, and the selection and preparation of the clinical faculty who will mentor and supervise teacher candidates.

Under Standard 5, Faculty, the NCATE Standards describe the criteria for selecting student teaching supervisors. At the *acceptable* level they make a distinction between **professional education faculty** (i.e., university supervisors) and **school faculty** (i.e., cooperating teachers). The former have doctorates or “exceptional expertise” and recent experience in school settings at the levels they supervise. **School faculty** usually do not have a doctoral degree. They are “accomplished professionals,” certified in the areas in which they are teaching, and they have been prepared for their roles as mentors and supervisors.

Standard 5 also describes the qualifications of teacher education faculty: they are “qualified” and model best professional practices in the triad of scholarship, service, and teaching. They look at candidate performance as an indicator of their own effectiveness and collaborate with colleagues in the disciplines and schools. They participate in ongoing formative evaluation and professional development.

At the *target* level, **professional education faculty** have an additional criterion added to the *acceptable* level: they are “meaningfully engaged in related scholarship.” Beyond that, the line between public school and higher education roles blurs and is replaced by a single category called **clinical faculty**, who, in addition to the *acceptable* criteria, “are master teachers or well recognized for their competence in their field.”

As the Blue Ribbon Panel observed in the Executive summary, expectations for supervisors are vague: the standards offer no clarification about what it means to be “prepared for their roles as mentors and supervisors,” or what the criteria are for a “master teacher” or being “well recognized for their competence in the field.” Nor do they elaborate how partnerships should “create roles and structures that create opportunities for candidates to learn.”

### Qualifications for University Supervisors and Cooperating Teachers at Public Illinois Universities

How well do those who supervise student teachers meet the Illinois standards? Given the lack of specificity of the standards, that would be hard to answer definitively, but we will look at requirements from four public Illinois colleges of education. Qualifications for university supervisors at Illinois universities are relatively easy to come by, given that when institutions advertise for new supervisors, the qualifications are listed in the published job description. Some colleges of education also list the qualifications in online resources on their websites. Because these descriptions may have changed since the posting that was publicly available to us, we will not link qualifications with specific institutions. Our sample was purposive, including both a Chicago area university as well as a downstate small city, a suburban, and a rural institution.

#### University Supervisor Qualifications

Institution #1 requires that an applicant has completed a master’s degree, has a teaching certificate as well as two years of successful teaching experience,

and possesses oral proficiency in the English language. Student teaching supervisors at this institution work “under the guidance of tenure-track faculty,” who are the instructors of record. Education beyond the master’s degree is “preferred.” Applicants must commit to participating in 3-4 professional development seminars per semester with the student teachers.

Institution #2 requires that a candidate have a master’s degree, Illinois certification, and three years of teaching in the certified area. The requirements we located for this institution were specific to elementary education. Student teaching supervisors at this institution are directly responsible for supervising student teachers and concurrently teaching seminar classes. The description specified experience in student teacher supervision and/or evaluation of instruction in the schools. The job also required knowledge of several Apple computer applications and “documented experiences working with teachers and administrators in multiple ways such as planning summer school programs or providing inservice programs for teachers.”

At Institution #3 the requirements we located were specific to art education. Supervisors of art student teachers are directly responsible for supervision and evaluation. Minimum requirements are that the prospective supervisor be a graduate student currently enrolled for six graduate credits hours in an art program and able to provide his/her own transportation to school sites. A preferred qualification is that the applicant have previous K-12 art teaching experience in the U.S. The position responsibilities/functions section of this job description suggests that the applicant would need to be prepared for certain job expectations “to conduct classroom observations of preservice teachers” and “provide written feedback on observations, reflections and lesson plans,” but these expectations do not show up in the requirements section.

At Institution #4 requirements vary by rank. The rank of Instructor requires a completed master’s degree in an education related discipline. The rank of lecturer requires a completed doctorate. The responsibilities section of this advertisement indicates that a specialty in instructional supervision and/or teacher education is preferred. The university supervisor has the responsibility of confirming placements and overseeing multiple levels of teacher candidates in a variety of majors in early field experiences and student teaching. They are also responsible for serving as a liaison between the College and school districts and teaching at least one course on campus attached to early clinical practice or other requirements for teacher education students. The supervisor also needs to be competent in the use of the web application that the institution uses to guide students in the development of their capstone portfolios and be willing to give training and assistance to students in that application.

#### Summary of University Supervisor Qualifications

The requirements for Illinois **university** supervisors at these four institutions seem to be well below, not only the envisioned qualifications of the NCATE Blue Ribbon Panel, but even below the minimums set by the 2007 NCATE/ISBE standards. The latter included doctorates or “exceptional expertise” and recent experience in school settings at the levels they supervise. Only three of the four require master’s degrees, and two are vague about certification and teaching experience

All four institutions set higher standards for what is “preferred” or “desirable,” but those qualifications can be waived when the search does not yield someone who meets the standards. In times when university budgets are tight, the likelihood is that the university supervisors hired will fall more into the **minimums** rather than the **desired**. On a more positive note, many of the “desirable

qualifications” were in line with the NCATE/ISBE standards. Also, there was a clear theme that there would be a preference for hiring those who had expertise with helping student teachers with documenting their attainment of state standards on electronic portfolios.

### **Qualifications for Cooperating Teachers at Illinois Universities**

Getting access to information about selection for cooperating teachers proved far more challenging. Not one of the four institutions we contacted had public domain information that we could access about how they selected cooperating teachers. In fact, in talking with faculty at some of the institutions, we found that there was a lack of common consensus about how cooperating teachers were chosen. We provide the best information we could get from multiple sources who would talk to us as of Summer 2011.

At Institution #1 basic requirements include an Illinois Rank II Teaching certificate, and a master's degree. Desired qualifications include education beyond the master's degree or certification beyond Rank II.

Institution #2's basic requirements are also an Illinois Rank II Teaching certificate and a master's degree. Desired qualifications include education beyond the Master's degree or certification beyond Rank II; elementary teaching experience, as well as experience in student teacher supervision and/or evaluation of instruction in the schools.

Institution #3 is vaguer about their basic requirements, seeking only “appropriate certification” and a minimum of three years teaching experience. No desired qualifications were mentioned.

Institution #4's basic requirements include a minimum of two years of successful teaching, proficiency in the English language, and a master's degree in a teacher certification area. Also required is certification in the content area of the student teacher whom s/he will be supervising and approval of appointment by LEA administrators and the university supervisor. Desirable qualifications are significant experience in instructional supervision or school-based clinical supervision.

### **Summary of Cooperating Teacher Qualification**

Again, real world standards fall well short of the Blue Ribbon Panel's recommendations and even miss the minimums of the NCATE/ISBE's standards. Requirements that *school faculty, i.e., cooperating teachers*, be “accomplished professionals,” “certified in the areas in which they are teaching, prepared for their roles as mentors and supervisor” are not evident in the minimal requirements for cooperating teachers that we could locate in the public domain. *Desirable* qualifications trend toward the target standards.

In the final section of this article, we move from description of qualifications for those who supervise student teachers to a view of what supervisors' practices look like in the field and the impact of their practices as perceived by preservice teachers.

### **Narrowing the Gap at One Institution: Insight from our Qualitative Case Study**

For the past five years a team of six researchers at our institution has undertaken a study of our teacher candidates' experiences during their last two semesters before graduation, exploring their development and construction of identities as teachers. This longitudinal, embedded multiple case study (Merriam, 1998; Stake, 2000; Yin, 2003) utilized multiple focus groups (pre and post), observations, interviews, and artifact collection to gather qualitative data. The design

of embedded case studies within a larger context provides triangulation and is “considered more compelling, and the overall study is therefore regarded as more robust” (Yin, 2003, p. 64). While all members of the research team are teacher educators, we have a variety of research agendas, and various members of the team have mined the data to answer specific questions related to their research interests (e.g., McIntyre., McIntyre, Glassett, Killian, Miller, & Mogharreban, 2009, 2010). Mogharreban, McIntyre, & Raisor (2010), for example, looked specifically at early childhood preservice teachers' constructions of becoming an intentional teacher.

In our case, we wanted to use the data to explore preservice teachers' perspectives about the supervisory practices of their programs. The rich data available allowed us to get a comprehensive picture of not only the practices that they experienced, but their perceptions of those practices, a perspective rarely addressed in earlier studies. The research questions that guided our analysis were twofold: (1) What are preservice teacher's perceptions of the supervisory practices they encountered during their field experience?, and (2) How have these experiences shaped their development?

In formulating our questions and anticipating themes that we might find in the data, we drew heavily on the research and literature on supervisory practices during field experiences. In spite of reforms and alternative supervisory models advocated over the past twenty years, the traditional triad of preservice teacher, cooperating teacher, and university supervisor persists as the supervisory model across the country today (Koerner, Rust, & Baumgartner, 2002; LaBoskey & Richert, 2002). How effective the two types of supervisors are in their roles has been subject to research and speculation. In the literature, university supervisors are the more controversial figures in the triad, and the research findings on their effectiveness tend to be mixed (Darling-Hammond & Hammerness, 2005). Some have even characterized them as a needless drain on resources. (Bowman, 1979; Slick, 1998). By contrast, a strong research theme over the years has been that the most significant source of influence on student teachers' future practices is the cooperating teacher with whom they are placed, not their university supervisor (Karmos & Jacko, 1977). Because it is the cooperating teacher who is present in the classroom on a daily basis, s/he is the one who has the greatest opportunity to provide frequent formative feedback (Gal, 2006; Zimpher, deVoss, & Nott, 1980).

Whether looking at the cooperating teachers' or university supervisors' practices, there is limited understanding of how supervisors influence change in student teaching behaviors (McIntyre, Byrd & Foxx, 1996; Koerner, Rust & Baumgartner, 2002; Pajak, 2002; Zeichner & Liston, 1987). By contrast, the literature does provide some lessons about clinical practice and supervisory effectiveness. In their review of effective supervisory practices, Killian and Wilkins (2009) reviewed several earlier studies and found several common themes, most of them related to feedback. Frequent and timely feedback is paramount (Enz & Cook, 1992; Lowenhaupt & Stephanik, 1999; Wilkins-Canter, 1996), and the feedback needs to be clear, relevant, and based on objective data (Barnes & Edwards, 1984; Acheson and Gall, 2003). Focusing on data collected during observation and sharing it during conferences was associated with increased reflection and goal setting (Kiraz, 2004; Badger, 2008). Additionally, the literature suggests that effective cooperating teacher feedback needs to be balanced, communicating both positive and negative content in a timely manner (Richardson-Koehler, 1988).

### **Findings from the Present Study**

For student teachers in the longitudinal study at our institution, several factors came to the top in being associated with the highly successful student

teaching experiences. First, there was abundant evidence that the university supervisor plays a powerful role in ensuring the quality of the field experience. Looking at interview and focus group data from several student teachers who worked with one exemplary supervisor revealed several attributes and practices worthy of consideration for our broader program. This supervisor had formal preparation in clinical supervision and systematic observation, as well as deep understanding of the conditions that promote partnerships and quality mentoring. She engaged with cooperating teachers as colleagues in promoting the growth of the student teachers, and actively involved the student teachers in choosing the focus of observations and assessing their progress toward mutually determined goals.

Having a university supervisor of this caliber seemed to be consistently associated with a very positive student teaching outcome. An important consideration for our program, it would seem, would be how we can shore up our requirements for hiring so that, at a minimum, we begin to restrict new hires to those who have formal preparation like this supervisor's, which includes all the elements of systematic observation and conferencing.

Another factor strongly associated with the quality of the field experience was the preparation of the cooperating teacher for his/her mentoring role. There are many prior experiences that seem to help with this, from having taken a formal evaluation or mentoring course to having gone through the National Board for Professional Teaching Standards process, but at our institution the most common experience that we could link to quality supervision was having participated in a mentoring workshop that we have offered to cooperating teachers for the past eight years. The workshop is based on a model developed and implemented at Ohio University (Murray & Hillkirk, 1998), and it includes training in the use of three major tools: a consultancy protocol, which provides a timed framework for a critical discussion of a lesson plan, unit, or classroom dilemma; reflective observational coaching, which develops skills of conferencing objective data collection; and collaborative action research, which provides a simple structure for teachers to follow as they plan a project together.

The interview data and focus group data from the students whose cooperating teachers had participated in this workshop showed far more evidence of regular co-planning and conferencing, and far less evidence of untalked about issues that went ignored until they began to affect the outcome of the field experience. The limited resources of recent years have led us to limit this workshop to the K-8 schools with whom we have PDS agreements, but the difference in quality that we see between those who have had formal preparation and those who have not should push us toward expanding the access to those workshops.

Finally, a clear relationship is apparent between the quality of the field experience and the continuity of the student's assignment to a placement. The most problematic student teaching experiences we observed in our cases occurred among student teachers who, for whatever reason, ended up in classrooms that were completely new to them for their final field assignment. At a minimum this resulted in a slow startup: the acclimation time for the new context absorbed at least the first two weeks of the semester. But in a few cases last minute changes threatened the outcome of the student teaching experience. When there is a bad fit between a cooperating teacher and a field experience student in a semester prior to student teaching, there is still an opportunity to move the student to a new placement the next semester without a major upheaval. This is not the case during the student teaching semester. A mis-fit can quickly move beyond easy resolution. In one of the most difficult situations we followed in our research, a student teacher who was reassigned mid-semester gave much thought to leaving the profession. Fortunately,

the new cooperating teacher was more compatible with her needs and style, and her new placement proved to be a positive context for her to grow and finish her student teaching.

At the other end of the continuum are our student teachers who choose to be yearlong student teacher interns. This is a voluntary program in which student teachers begin the academic year in the classroom in which they will student teach. In the fall they spend three days a week in the classroom. For the whole academic year, they follow the school district's calendar, which means that they are with the cooperating teacher from the time they set up their classrooms, through parent conferences, the transitions to the holidays, the stresses of testing and the end of the school year. In interviews, observations, focus groups, and cooperating teacher feedback, we found a substantial difference between the quality of these student teaching experiences and the standard fifteen week experience. Both student teachers and cooperating teachers laud the lack of "down time" at the beginning of the student teaching semester. Yearlong interns know the routines, the students, the curriculum from the start. They are ready to hit the ground running. We found strong evidence in the intern group of co-planning and regular conferencing with cooperating teachers. When we observed in the interns' classrooms, the cooperating teachers were almost always present and actively involved in the lesson. In these classrooms the model seemed to be co-teaching rather than the turn-teaching that we observed in many of the single semester placements. The co-teaching model seemed to provide maximum opportunity for on-the-spot help if the student teacher needed it as well as more individualized help for the children in the classroom. Our qualitative research data suggest that there is a relationship between continuity and the quality of the student teaching experience, but that is a long way from establishing causality. Perhaps students who do not have the financial resources to allow them to opt out of part-time employment are not taking advantage of the yearlong internship. While it is tempting to want the benefits of the year long teaching internship for all students, much more research would need to be done to warrant a broader requirement.

### **One Institution at a Time**

The Blue Ribbon Panel's *Design Principal #9* advocates for a powerful research agenda at our individual institutions: "While not every clinically based preparation will contribute new research knowledge or expand development, each must systematically gather and use data, and become part of a national data network on teacher preparation that can increase understanding of what is occurring and evidence of progress in the field." The insight we have gained from our collective research on preservice teachers' perspectives and experiences has helped us to think about changes in practices that could move us closer to the Panel's vision for the future of field experiences. It may also help colleagues in other teacher education programs to think about how they could gather and share data about at their institutions. We all have the opportunity as teacher educators to become part of the "national data network on teacher preparation" that the Panel describes above by sharing our new research knowledge in our national and state journals and conference.

There will inevitably be a time lag while this rigorous national research agenda on clinical preparation gets funded, awarded, and implemented. Over the next decade or longer, those of us involved in the preparation and supervision of teacher candidates would do well to consider how we can move closer to what appears to be the widely accepted future standards.

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## THE DIVERSITY DIALOGUE: RETHINKING PEDAGOGICAL PRACTICES TO PROVIDE HOPE FOR PRE-SERVICE TEACHERS

by

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### Abstract

*This study examines how a diverse dialogue addresses cultural differences and social injustices and how cultural responsiveness helps teachers approach education more equitably. When teachers use a diverse dialogue, they are able to create a classroom curriculum that includes all voices, experiences, and activities and satisfies the needs of all learners. The study also suggests that teachers adjust their pedagogical practices to the ever-changing multicultural classrooms. Through an examination of best practices, teachers will be able to invest in more creative and diverse approaches that will not only benefit the individual student, but also the entire classroom. Applying positioning theory and social learning theory, teachers can effectively teach today's 21<sup>st</sup> century learners.*

Managing diversity and inclusivity in today's classroom, about which much has been written and said, requires creating a healthy dialogue about teacher education and teacher preparation. As Peter Fenn asserts, "A basic tenet of a healthy democracy is open dialogue and transparency" (Fenn, 2012). The world is rapidly changing and who we are is continually evolving. Who a person is culturally and how he or she interacts with the world is a fascinating complex of language, values, beliefs, behaviors, and experiences that encompass every aspect of one's life. What culture is *not* is an isolated, mechanical aspect of life that can be used to explain phenomena in the classroom or that can be learned as a series of facts, physical elements, or exotic characteristics (Banks 2006; Gay 2000). The study of culture is not an experimental science in search of a law. Rather, it is a highly interpretive one in search of meaning (Geertz 1973).

The brain learns by connecting new information to concepts that it already understands. It naturally searches for meaning; thus, old learning becomes the foundation on which new information is constructed and students become motivated by the newly acquired information. According to literature on culturally responsive teaching, the teacher and student must continually create four motivational conditions in order to enhance learning: inclusion, attitude, meaning, and competence. These conditions are systematically represented in a motivational framework that 1) respects diversity; 2) engages the motivation of a broad range of students; 3) creates a safe, inclusive, and respectful learning environment; 4) derives teaching practices from across disciplines and cultures; and 5) promotes equitable learning. While respectful of different cultures, the framework enables the construction of a common culture within the learning environment that all learners can accept. The four motivational conditions act individually and in concert to provide a pedagogical ecology that continuously enhances intrinsic motivation to learn (Ginsberg & Wlodkowski, 2009), as detailed below:

1. Establishing Inclusion: Creating a learning atmosphere in which learners and instructors feel *respected* by and *connected* to one another.
2. Developing Attitude: Creating a favorable disposition toward learning through personal *relevance* and learner *volition*.

3. Enhancing Meaning: Creating *engaging* and *challenging* learning experiences that include learners' perspectives and values.

4. Engendering Competence: Creating an understanding that learners have *effectively* learned something they value and perceive as *authentic* to their real world.

These conditions work in concert within the framework to influence students and teachers; they occur over time as well as a moment. In a competitive global society characterized by rapid demographic shift, new social and academic challenges are facing higher education. One in three students is a racial or ethnic minority. The National Center for Educational Statistics (NCES, 2011) projected that 27 percent more Black students will be enrolled at degree-granting institutions in 2015 than in 2004. The growing number of minorities is most dramatic for Hispanic students: the report projects a 42 percent increase by 2015. By 2020, 46 percent of the student population will be students of color (Latino/a), and 10-20 percent of school age youth will self-identify as gay or lesbian (Sapon-Shevin, 2001). According to the National Education Association (NEA), American Public Schools enroll about five million English Language Learners (ELLs) and that number is expected to double by 2015 (Austin, 2012). The implications of this ethnic diversity for higher education are significant. Hence, the ways in which colleges and universities attempt to prepare teachers to respond to these changes are critical.

Colleges of Education have a pivotal role in preparing pre-service teachers for teaching in diverse classrooms. Numerous studies show that faculty and staff success in integrating diversity into their curriculum is intertwined with an understanding and appreciation for culture and depends largely on the level of institutional support (Brown-Glaude, 2009). Through the power of multicultural education, teacher educators have the privilege of providing their students with unbiased, responsive, and critical instruction. Those who employ culturally relevant pedagogy must attend to their students' cultural and social needs as well.

To begin, teacher educators need to adapt their own pedagogy to the modern needs of students in a diverse classroom. It is essential for academicians to engage in a more diverse dialogue, one that is relevant to the learner, both inside and outside the classroom. Research has shown that no one teaching strategy will consistently engage all learners. The key is helping students relate lesson content to their own backgrounds (Wlodkowski & Ginsberg, 1995). Through a dialogue that addresses cultural differences, social injustices, identity formation, and other forms of diversity, students learn to critically assess society through the perspective of a different lens. This research examines how a diverse dialogue addresses cultural differences, social injustices, and cultural responsiveness and thus helps teacher educators and their students approach education more equitably. Furthermore, this study examines how Colleges of Education across the United States should encourage pre-service teachers and veteran teachers alike to adjust their pedagogical practices to meet the needs of an ever-changing society. Through examining best practices, pre-service teachers will gain the ability to invest in creative and diverse classroom approaches that will not only benefit the individual student, but also the entire classroom. Positioning theory and social learning theory provide hope that teachers can learn to effectively teach 21<sup>st</sup> century learners.

### Theoretical Framework

This paper discusses ways in which teachers can positively position students in the classroom so that students do not view themselves as "outsiders," as those on the margins frequently do. Positioning theory from research on English Language Learners (ELLs) provides a theoretical perspective for working with students' social

consciousness, classroom views, and classroom participation. ELLs need to be placed in a position of empowerment and encouraged not to remain silent nor isolated but become part of the diversity dialogue. Students' cultural and social needs must also be considered as teachers attempt to understand how students learn; therefore positioning and social learning theories are the theoretical framework guiding this paper.

### Positioning Theory

Positioning theory relates to how student and teacher roles inside the classroom are determined. It is defined as "the study of local moral orders as ever shifting patterns of mutual and contestable rights and obligations of speaking and acting" (Harré & van Langenhove, 1999, p.1). Positioning is a metaphorical term originally introduced to analyze interpersonal encounters from a discursive viewpoint (Hollway, 1984). This theory can be two-fold: intentional self-positioning theory and interactive-positioning theory. The self-positioning theory details how individuals view their own world from a certain position while the interactive positioning theory explains that "what one person says positions another" (Davies & Harré, 1990, p. 48). These two theories can directly relate to the teacher/student relationship. For example according to Yoon (2008), teachers' pedagogy can directly affect how they believe a student will interact in their classroom. This belief is conveyed to the student and can directly relate to his or her reflexive self-positioning. If a teacher uses dialogue that a student can personally take negatively, the student will then imitate the behavior he or she believes the teacher expects (Yoon, 2008).

In an unequal society where power relations are continuously at work, participation and dialogue do not occur as freely among language learners. The main reason for students' anxiety, silence, and different positioning has much to do with being outsiders in the regular classroom context. (Yoon, 2008, p. 498)

According to Yoon's research, a particular teacher believed that the ELL students in her class were not "working as hard as the other students" (Yoon, 2008, p. 513). The ELL students knew they were not succeeding as well in her class as in the others and one of the ELL students even mentioned, "I just keep everything to myself. I don't think she likes me" (Yoon, 2008, p. 514). How teachers position themselves inside the classroom is critical to the success of their students.

Yoon (2008) also discusses the teaching strategies of three teachers with English language learning (ELL) students in multicultural classes. The teacher with the most profound effect on the students was the teacher who incorporated the new students inside the classroom dialogue. A closed dialogue in a classroom incorporates only American culture examples in the curriculum so only students comfortable and familiar with that aspect of American culture can participate. Inclusivity is key to increasing the dialogue and should be embraced. Inclusivity can mean simply asking students, especially ELL students, to share their lived experiences as they relate to the curriculum. This diverse dialogue allows *all* students to consider themselves part of the learning community. Such dialogue can create a sense of community not only for the ELL students, but also for the mainstream students who have the chance they have not had before to see similarities in their classmates or hear their classmates speak. When a classroom learning community is established, students have the opportunity to see each other as learners rather than focusing and separating themselves by differences. Teachers have immense power to help all students feel appreciated in genuine ways which is critical.

Garcia, et al. (2010) reflect upon the preparation of English Language Learner (ELL) teachers. Recent research has noted that culturally responsive teaching is

implemented in superficial ways that do nothing to alter the curriculum. Researchers have also focused on institutional reform that can only be achieved through the development of “teacher knowledge through contact, collaboration, and community” (Garcia, et al., 2010, p. 132). A study by Schoorman and Bogotch (2010) looked at teachers’ conceptualizations of multicultural education and the implications for practice in K-12 classrooms. Through focus group interviews supplemented by survey data, they found that all teachers viewed multicultural education as a positive concept. However, they also found that teachers associated multicultural education with demographic diversity rather than with social justice. This study is consistent with Banks’ (2008) study that discusses ways teachers think and perform regarding culturally responsive teaching. Culturally relevant teachers must utilize students’ culture as a vehicle and means for learning.

### **Social Learning Theory—Efficacy**

As in positioning theory, Bandura’s social learning theory views students in the social context of learning. Social learning theory is primarily concerned with how individuals operate cognitively on their social experiences and how these cognitive operations influence their behavior and development. Bandura believes that people conceptualize and integrate the information they encounter through a variety of social experiences. Social learning theory deals with the observation of others and the environment in which one may find oneself. According to Bandura, (1977a), students who feel efficacious about their ability to master their schoolwork select challenging activities, expend effort, and persist when tasks become difficult. Human motivation, influences, and behavior all contribute to the thought process and function as the cognitive component of social cognition. Additionally, social cognitive theorists believe that people are neither driven by inner forces nor automatically shaped and controlled by external stimuli (Bandura, 1977a, 1986). Rather, human functioning is explained in terms of a model of triadic reciprocity in which behavior, cognitive and other personal factors, and environmental events all operate as interacting determinants of each other. (Bandura, 1986, p. 18).

Since personal agency is socially rooted, it operates within the socio-cultural influences. Therefore, the individual produces the product, creates the construction, decides the discovery, and determines the destination necessary in order to be successful in his or her own environment and social system. The individual, the environment, and the behavior are the key. According to Bandura (1977a), the behavior upon which people base their beliefs can be developed by four types of influences: (1) enacted mastery influence, (2) vicarious influence, (3) physiological and emotional influences, and (4) verbal and social persuasion influence.

*The enacted mastery influence experience* is the most powerful source of perceived self-efficacy because successful experiences provide tangible evidence that one can accomplish the behavior. Additionally, such experience provides the most authentic evidence of whether one can manage whatever it takes to succeed in spite of circumstances (Bandura, 1982; Feltz, Landers, & Raeder, 1979; Gist, 1989). Obtaining success easily undermines robust efficacy beliefs because one may expect quick results and become discouraged when faced with failure. “A resilient sense of efficacy requires experience in overcoming obstacles through perseverant effort” (Bandura, 1995, p. 3). Failure is sometimes beneficial because it teaches that success requires sustained effort. Establishing a sense of efficacy through mastery experiences involves acquiring the cognitive, behavioral, and self-regulatory components for creating and executing the appropriate course of action. Obstacles can provide a chance for people to discover how to turn failure into success by

honing their capabilities to exercise better control over events. In addition, many people come to realize with mastery experiences that they are able to persevere and rebound from setbacks.

The *vicarious influence experience* is partly an appraisal mediated through observing others’ attainments. This type of experience is provided socially and offers another way of creating and strengthening efficacy beliefs. It involves watching models perform the task with little adversity. Simply seeing people similar to oneself succeed provides a vicarious experience. Therefore, people appraise their capabilities in relation to the attainments of others. By the same token, observing others fail despite high effort lowers observers’ judgment of their own efficacy (Brown & Inouye, 1978). Modeling, for example, can be influential when models or modeled activities are personally relevant to the observer (Bandura, 1986). This is especially true for pre-service teachers: if the modeled activity is personally relevant (e.g., because of culture, gender, age, or class), the probability of the observer’s learning vicariously is enhanced (Hackett & Byars, 1996).

The *physiological and emotional influence experience* refers to how the emotional state of individuals affects their behavior. Physiological and emotional influence is effective because health functioning and affective states can produce widely generalized effects on one’s beliefs in different realms of human functioning. Many people experience physical stressors that affect their perceived efficacy. Bandura’s (1995) theory views stress reactions in terms of perceived inefficacy to exercise control over threats and taxing environmental demands.

The *social and verbal persuasion influence experience* occurs when someone convinces the individual that he or she is capable of accomplishing the task. People who are persuaded verbally that they possess the capabilities to master given skills are likely to demonstrate greater effort and endurance than if they entertain self-doubts and dwell on insufficiencies when problems arise. Teachers have enormous verbal persuasive influence. It is easier for someone to sustain a sense of efficacy, especially when difficulties arise, when significant others express faith in him or her and others convey the idea that he or she has the ability to master the skill. However, the positive message must be within realistic bounds if change or influence is to occur. When an individual already believes that he or she can produce an effect through his or her action, social persuasion can have one of the greatest impacts for the individual (Chambliss & Murray, 1979a, 1979b). Developing students’ efficacy, provides long-term academic benefits, motivation and persistent learning behaviors (Liew & McTigue, 2010).

### **Creating a Community of Learners**

The classroom is much more than simply a place where students come to learn how to read and write. The individual classroom is a community of learners. Through this community, of learners, students learn how to socialize, adapt, and integrate knowledge in every capacity. Without a sense of belonging and assurance, a classroom is quite simply a room of individuals. Bringing this sense of “community” inside the classroom requires implementing a rich and diverse dialogue. Every single student inside a classroom is an individual with different ideas, talents, backgrounds, and home lives. These differences should not be pointed out or noted to make others feel different or isolated but rather these differences and unique perspectives should be celebrated. A diverse dialogue includes incorporating these differences into curriculum and classroom criteria.

A diverse dialogue can also do more than give students a voice in the classroom; it can provide hope to students who they feel they have none. In a recent study, new language was introduced in the classroom in order to inspire minority

students with disabilities to aspire for higher education, to envision possibilities beyond high school (Oesterreich & Knight, 2008). The new dialogue included speaking about college attendance and helping students envision themselves as college material through daily healthy dialogue (Oesterreich & Knight, 2008).

A diverse dialogue can be truly empowering in a college setting and provide hope especially for students who are on the margins. In the literature, a number of practices that involves effective teacher engagement may yield effective teacher-student dialogue. Such dialogue begins with what is classified as “good teaching” or “effective teaching.” Effective teachers generally are those who connect with students socially. These teachers allow students to take ownership of their own learning. McLaughlin, et. al (1986) posit that teachers in this category draw many of their rewards from students and are concerned about delivering quality education. This concern is likely to be manifested in classroom practices as teachers engage with students as holistic individuals, rather than as “empty vessels to be filled.” Engaged teachers seek more ideas, more creativity, new ways to listen, new ways to involve all students, and new ways to involve themselves in students’ personal and academic lives as students develop over time. This is a way to invite a diverse dialogue in the classroom setting and encourage further academic discourse. On the other hand, in Yoon’s (2008) study, a classroom with a closed dialogue proved to be a silencing instrument for multicultural students. When groups of students feel as if they are not part of the major culture and don’t understand the major culture examples used in the curriculum, they are apprehensive about participating. When the students feel as if they are not being asked to participate inside the classroom dialogue, they lose their sense of belonging and quickly become outsiders. Over a period of time the perturbed students begin to become silent participants, and silent students lose their sense of self and begin to feel powerless. A classroom should be a welcoming and warm environment where students feel safe, comfortable, and entitled to speak their minds and become active agents. A closed dialogue in a classroom can be a truly negative experience that may affect students throughout their education.

In order to empower invisible students to become visible, another aspect of a diverse dialogue includes celebrating differences among all students. By inviting dialogue inside the classroom, the teacher educator encourages the pre-service teacher to learn more about his or her students. The information that students share in class may not be familiar to all classmates. Providing an opportunity for the teacher and students to learn more about one another and celebrate these cultural differences is essential. According to Ford (2006), celebrating cultural identities can also work reflexively by giving students opportunities to research and learn about their own culture. Asking students to look reflexively at their own cultural identity can help them appreciate themselves as “cultural beings” as well as respect the differences of their classmates’ cultures (Ford, 2006).

Although prevalent educational models centralize critical consciousness and empowerment, most educational models are voiceless on cultural factors that go into teaching and learning. Cultural mismatch theory is used to explain why students are disengaged in schools or feel silenced in classrooms (Cross, 2003; Delpit, 1995; Fine & Weis, 2004; Irvine, 1990; Ladson-Billings, 1995a, 1995b, 2006; Nietos, 2002; Noguera, 2003). Education in the African American community has a history of demands for education to connect schooling to the African American experience and community. Gloria Ladson-Billings (1994) presents the stories of eight effective teachers, their pedagogy and practices, in a three-year study of successful teachers of African American students. According to Ladson-Billings, the teachers who participated were selected by African American parents and school principals.

Parents recommended teachers whose classes their children were enthusiastic about attending and from whom the children enjoyed learning as well as teachers who consistently demonstrated respect to parents. Additionally, parents perceived that the teachers’ practices prepared students to operate both in the home and broader communities. Principals, on the other hand, recommended teachers with high student attendance, few discipline referrals, and high standardized test scores. Ladson-Billings (1992) explains that both parent and teacher lists generated nine teachers and eight consented to participate. She posits (1994) that the eight teachers in her study shared what she calls a “culturally relevant pedagogy,” which she defines as a “pedagogy of opposition” that is committed to collective rather than individual empowerment of students.

Ladson-Billings (1995a) describes culturally relevant pedagogy as a way of teaching that incorporates various aspects of the students’ culture into the schooling process. This type of dialogue is a part of the diversity dialogue that teacher educators need to practice and should be discussed in teacher education programs. Ladson-Billings (1995a) study found that teachers who were family oriented, cultivated relationships beyond the classroom, encouraged collaborative learning through building a community of learners, and created an atmosphere of trust and support were successful with African American students, largely because of the greater match between these techniques and the cultural background of the students.

Ladson-Billings (1995a) articulated three criteria for culturally relevant pedagogy, the first of which is academic achievement. The eight teachers in her study found ways to get students to choose academic excellence by valuing students’ social skills and abilities and channeling them in academically important ways. The second criterion of culturally relevant pedagogy is that curriculum must demonstrate respect for, and encouragement of, students’ ability to operate within their cultural context. For example, one of the teachers in her study used non-offensive rap songs to teach poetic devices and figurative language. The students’ understanding of poetry far exceeded local and state expectations. Another teacher in the study allowed students to use their home language while acquiring standard English. Students could express themselves orally and in writing in their own language and were then required to translate into standard English at the final editing. By the end of the year, students demonstrated improvement in both languages (Ladson-Billings, 1995a).

The third of Ladson-Billings’ (1995a) criteria for culturally-relevant pedagogy, and the one most critical to this study, is that students must be taught to critique social inequalities. Freire (1970) developed the term “conscientization,” which is a process that invites learners to “engage the world and others critically” (McLauren, 1989, p. 195). Several of the teachers in Ladson-Billings’ (1994) study and their students engaged in a letter-writing campaign to the editor of the local newspaper to inform the public that their textbooks were outdated and to question the system of inequitable funding that allowed more privileged school districts to have newer texts. If schooling is about preparing students for active citizenship, what better citizenship tool than the ability to critically analyze society? Cultural identity is a large aspect of helping students to celebrate cultural differences. But it is also important for students to learn to respect cultural identities other than their own. Instilling multicultural respect can be done through many classroom activities. For example, students may be asked to research and present on a culture they are unfamiliar with, such as researching school life for Egyptian students, and then sharing with the class what they learned compared to their own classroom. Higher level thinking activities such as this one can encourage students to critically view the world around them in a

positive manner and to think pluralistically. Higher-level multicultural thinking can also be implemented in other subject areas. A physical education teacher, for example, can introduce sports that are popular throughout the world but with which American students may not be familiar, such as cricket. Many times these experiences are eye-opening for students who may have had previous negative misconceptions or misunderstandings about a culture other than their own.

### **Role of Teacher Education**

The role of teacher education is to provide models and hope to pre-service teachers. We as teacher educators must develop a healthy discourse as we discuss matters of race, social economic status, gender differences, sexual orientation, disabilities, and religion in order to debate in an unbiased and welcoming classroom. It is critical to initiate a higher demand for culturally responsive teaching because despite the demographic changes nationally among students, teacher demographics have remained relatively stable, with the majority of teachers being White (83 percent) and female (75 percent). The 2008 National Survey on Student Engagement (NSSE) reported selected results based on almost 380,000 randomly sampled students attending 722 US baccalaureate-granting institutions. Disappointingly, only 57 percent of first year students and half of seniors reported receiving substantial encouragement from their institutions to interact with students of different economic, social, racial, or ethnic backgrounds. Although it is important to implement ways of assisting children and encouraging them to explore their ethnic identity, it is also important for teacher educators to create a safe and unbiased atmosphere for developing student teachers. Atkinson and Sturges (2003) state that Teachers need to understand how their own backgrounds influence their teaching and interactions with students. For example, a White, middle-class female teacher may bring with her a set of assumptions about students' backgrounds and how people learn based on her own background and membership in a majority group. (p.33)

Teachers need to be unbiased and offer equal opportunities to all students no matter what their background. Atkinson and Sturges (2003) also state that low teacher expectations are resulting in a gap between academic achievement levels among children of African American and Hispanic descent in comparison to their White counterparts: "African American and Latino adolescents also report being graded unfairly, discouraged from joining advanced level classes, and disciplined wrongly by their teachers because of their ethnicity, and they often perceive themselves to have been discriminated against in public settings" (p.464). It is so important that teachers have a genuine care and love for their students and a desire for them to succeed. No student should feel discriminated against, especially when teachers are creating a safe haven in schools and providing hope for those who might feel there is no hope.

### **Transformative Education**

So how do we provide hope in order to transform our classrooms? In what ways can teachers open up classroom dialogue to ensure all students' voices are heard? Donna Ford (2005) asserts that teachers must assess themselves as educators, examine their biases, adapt their teaching modalities, and use formative assessment to ensure what they do is fair and equitable. Additionally, teachers must partner with families respectfully, respect and value cultural norms and traditions, listen with an empathic ear, and adapt the appropriate curriculum (Ford, 2005). Banks (2008) posits four approaches to multicultural reform. The contributions approach, often referred to as the celebration approach, highlights specific cultural elements such as heroes, holidays, folk tales, food, and clothing but leaves the core

curriculum untouched. The contribution approach, found to be most popular with White teachers, is said to gloss over real conflict issues of power and injustice (Banks, 2008; Halagao, 2004).

Secondly, in the additive approach, teachers believe they honor diversity and celebrate differences by treating all students the same. This approach was not considered culturally responsive by teachers in Banks' study because it was simply an "add on" and the cultural information was taught in isolation. Culturally responsive teaching should be integrated and appreciated throughout the daily lessons. The lessons should be authentic, consistent, creative, constant, and relevant. The additive approach could do more harm than good when it does not meet the appropriate guidelines as previously stated. The next approach is the transformation approach, in which the school and the teachers' classroom practices relate to diversity. The transformation approach embraces equity for all students and the curriculum shifts to an inclusive model. This approach involves critical thinking and an exploration of diversity (Banks, 2008).

Finally, the social approach, which is the most challenging approach, deals with choice, inequality, and oppression by helping others develop the skills needed for social action. Banks' study signifies the importance of using literature and other daily activities as a method to integrate culture in our everyday routine to demonstrate to students the importance of cultural differences, value, and purpose in the world. This approach could include having students write letters to government officials, encouraging voice for empowerment in policy making, and helping students develop a sense of personal and political efficacy (Banks, 2008).

Ford, Tyson, Howard, and Harris (2000) assert that an important goal for multicultural education should be to include teaching with a multicultural perspective, which requires educators to challenge assumptions and stereotypes. Multicultural literature can be a tool for redesigning an underlying framework of stereotypes and misconceptions students may have about particular races, ethnicities, and cultures. Authenticity in multicultural literature is highly important for promoting healthy and empowering dialogue inside the classroom to help undermine stereotypes and promote classroom harmony. This type of dialogue can provide voices, empowerment, and community closeness by using students to create a multicultural classroom. The students can learn from the experiences of one another and many times realize their similarities rather than focusing on their differences, thus celebrating one another. "The real test of culturally responsive teaching may lie in its ability to create classrooms where race, culture, and ethnicity are not seen as barriers to overcome but are sources of enrichment for all" (Phuntsog, 2001, p. 63).

### **Strategies For Providing Hope**

Inviting speakers to share their authentic experiences from various races, cultures, ethnicities, religions, and genders is one strategy for encouraging dialogue in class. Incorporating music, art, etc. and using electronic resources (i.e. Facebook, twitter, YouTube videos, discussion boards etc.) are other ways for encouraging students to share privately what they may not share openly in class. Discussion boards can serve as a wonderful way to invite meaningful dialogue and spark additional discussion. When asked what the discussion board meant to my student teachers, they replied:

The discussion board has really turned out to be a meaningful outlet where my peers can discuss ideas and thoughts they have about various topics in the field of education. We talk about giving children "a voice" to be heard when it comes to bullying, and someday we will become teachers and we will have to act as that "voice" for those kids. It's been nice to be given the opportunity to

voice our opinions about teaching and listen to those of our classmates. (An Anonymous Student, November 15, 2012)

The discussion board has meant a lot to me because it allows me to see everyone's opinions on the different subjects during the course of our class. I also see that it is a way for people to share their experiences to the whole class in a positive manner and to connect their story to the topic in a coherent manner. I really enjoyed doing the discussions every week this semester for this class. (An Anonymous Student, November 15, 2012)

Creating a dialogue of "trust" and openness so that *all* voices can be heard and a "safe space" is created is priceless. Students' dialogue will not only become a diverse dialogue, but an "empowered dialogue" that can change the world.

Additional recommendations by Gayle-Evans (2004, p. 14) that may be a starting point for diverse dialogue include the following.

For teachers:

1. Become co-learners with your students regarding your own cultures as well as different cultures, and
2. Use the community and its resources.

For schools:

1. Offer varied and consistent professional development opportunities that address culturally responsive teaching, and
2. Make a commitment to form family-community-school relationships.

Finally for teacher educators:

1. Model how to move culturally responsive teaching from theory to practice,
2. Provide students with opportunities to teach in a culturally responsive manner,
3. Have an open dialogue regarding the commitment needed for teaching and the importance of tension and discomfort as integral parts of change and of understanding, and
4. Encourage students to develop the attitudes and skills needed to successfully implement culturally responsive teaching.

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## EXAMINING DISEQUILIBRIUM IN AN IMMERSION EXPERIENCE

by

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### Abstract

*This study examines the disequilibrium raised by a cultural immersion experience, using the structure of White racial identity development, in an effort to better scaffold the immersion experience in the future. Thirty-two students participated in an immersion experience in Quito, Ecuador. The study follows their experience as they strive to make sense of their experience and begin to understand and unpack their own sense of privilege. The six stages of racial identity development are used as a grid through which to view and consider the experiences of teacher candidates in a cultural immersion experience. Two predominant themes included schools/classroom management, and language/culture/race.*

Many, perhaps most, of our white students in the United States think that racism does not affect them because they are not people of color: they do not see "whiteness" as racial identity. Harlon Dalton, 1995

Imagine three professors discussing the most profound learning experiences of their lives. Of the three of us, one is Latina and two are White. We all name international experiences as the most far-reaching learning experience in our lives. That initial conversation has led to many others. We dream of giving our graduate students similar experiences and ultimately we have devised a program that allows our teacher candidates an immersion experience in Quito, Ecuador, giving them an opportunity to experience what it is to be racially, culturally and linguistically other.

Over a two-year period, we have led 32 students to Ecuador for three-week practicums that included homestays. They live with Ecuadorian families, teach in Ecuadorian schools and study Spanish. At the end of the practicums, the outcomes remain varied. One refrain that is repeated at interesting intervals in both groups is one that deals with a new realization of what it means to be White, American, and privileged, exemplified by a student comment, "I have never felt more like a stupid American!" This refrain comes from all age groups and is echoed in their debriefing forums when they returned home. We joined forces with a colleague who is assisting us in understanding white racial identity development. The purpose of doing so is to examine the disequilibrium raised by the immersion experience, using the structure of White racial identity development, in an effort to better scaffold the immersion experience in the future.

### Literature Review

This paper adds to the literature about cultural immersion experiences and preservice teachers, a predominantly White and middle class demographic. Unique to this study is the use of Helms's (1990, 1995) model of White racial identity development in order to examine stages of identity, as well as growth, throughout the experience.

### Teacher Education Students and Cultural Immersion Experience

Many universities offer international opportunities, but it is uncommon for teacher education students to participate in these experiences (Quezada, 2004;

Quezada & Alfaro, 2007; Roberts, 2007). Reading about, discussing, and analyzing another culture does not equal the benefits of experiencing the culture and the role of “the Other.” Cushner (2007) stated:

Middle-class white teacher educators who are effective at teaching for diversity had their most profound and impactful experiences while living outside their own country. These teachers had, thus, encountered discrimination and exclusion by being an outsider within another cultural context. (pp. 35-36)

Having established the need for an immersion experience for our students, it became a point of interest to consider preservice teacher attitudes towards diversity. It was essential to recognize both the goals for which we were striving and the possible cautionary notes along the way. Numerous studies (Burriss & Burriss, 2004; Flores & Smith, 2008; Gay, 2002; Hollins, 1993; Lin, Lake & Rice, 2008; Wiggins & Follo, 1999; Youngs & Youngs, 2001) note the importance of exposure and immersion in diverse cultures. Ference and Bell (2004) found that even a two-week cross-cultural immersion experience in the United States increased knowledge, skills, and dispositions regarding immigration, culture, preconceptions, misconceptions, and feelings of isolation. Cautions included an over-inflated sense of competency on the part of preservice teachers (Burriss & Burriss, 2004; Wiggins & Follo, 1999) and the reality that students who find the exposure to other cultures too difficult do not desire to work with diverse school populations (Wiggins & Follo, 1999).

Race is a social construct that was created to benefit an economic system that arbitrarily allocates resources according to race (Helms, 1994; Helms & Richardson, 1997). Although race has been socially constructed, it clearly has real-life implications, and people “develop identities in conjunction with their racial classifications” (Marshall, 2002, p. 11). Identity is much more complex than racial identification. As Tatum (1999) explains, racial identity is intertwined with other aspects of identity, such as gender, age, socioeconomic class, sexual orientation, religion (or atheism), and disabilities (Tatum). This rich diversity was seen throughout student comments.

Marshall (2002) describes racial identity, like race, as a construct. Racial identity describes “our inclination to identify (or not identify) with the racial group to which we are assumed to belong” (p. 9). Many factors contribute to one’s racial identity development, including family, society, politics, and history (Tatum, 1999). In the United States, people of color commonly receive messages of inferiority, whereas Whites develop a sense of superiority and entitlement due to societal messages (Chavez & Guido-DiBrito, 1999). In fact, “societal norms have been constructed around [Whites’] racial, ethnic, and cultural frameworks, values, and priorities” (Chavez & Guido-DiBrito, p. 39) to the point that Whites receive and internalize the message that they do not have a race or culture but that they represent the norm. This is something we observed in our study and which caused a great deal of disequilibrium for our students.

Models of racial identity development originated in the 1970s (Moule, 2012). The models were designed with people of color in mind, particularly African Americans, with the purpose of defining the process of creating a positive identity in a racist environment (Helms, 1995). Helms (1990) began to develop a model of White racial identity development in the 1980s. As she points out, “the central racial identity developmental task for a person of color is to resolve intra-psychic conflict involving whites as the contrast group” (Helms, 2003, p. 46), whereas developing a non-racist identity is part of developing a “healthy white identity” (Helms, 1990, p. 49). The White racial identity development model is interpreted broadly in this study

to address the cultural differences students experienced, which includes race, language, and culture.

The first stage is *Contact* a time of unexamined contact with people of color and/or vicarious contact (e.g., through the media) (Helms, 1995). This may be marked by a color-blind attitude or by a desire to avoid any “anxiety-evoking” racial information (Moule, 2012). The second stage, *Disintegration*, is often precipitated by a moral dilemma concerning race that results in cognitive dissonance (Helms). There is an acknowledgement that race makes a difference and there may be an initial discomfort with privilege (Moule). *Reintegration*, the third stage, is marked by a conscious acknowledgement of White identity. However, this identity is seen as superior to people of color: Often “any residual feelings of guilt and anxiety [from the dissonance in the previous stage] are transformed into fear and anger toward [people of color]” (Helms, p. 60). Helms describes the next stage, *Pseudo-Independent*, as the “first stage of redefining a white identity” (p. 61). In this stage, Whites begin to understand racism and their role in it, but this is an intellectual awareness only. A person might espouse a liberal ideology, but it may not be emotionally integrated (Moule). *Immersion-emersion*, the next stage, is a time when Whites seek a re-education and a personal understanding of racism and how one benefits. This may be the result of feeling rejected or isolated in some way (Moule). The final stage, *Autonomy*, is a time of “internalizing, nurturing, and applying the new definition of whiteness evolved in the earlier stages” (p. 62). This stage is marked by flexible analyses and responses to racial material” (p. 188) and a positive, productive view of being White. Whites at this stage have developed the capacity to relinquish privilege and prejudice (Moule). Helms stresses the need to think of White racial identity as an ongoing, cyclical lifelong process. Further, as will be seen, one person’s responses may vary from stage to stage according to circumstances.

How did preservice teachers deal with disequilibrium and discomfort during a cultural immersion experience in Ecuador, according to the stages of White racial identity development? What are the implications for teacher education programs?

### Methods

During the time of the research, 3,253 students (60% undergraduate and 40% graduate) were enrolled at the private religious liberal arts university, which is located in the Pacific Northwest in the United States. The university does have a documented plan for achieving diversity, but like many private institutions in the region, the student and faculty populations are overwhelmingly white: 80% of undergraduates were white, and statistics for graduate students and faculty were unavailable. The faculty involved in the study were full-time members of the teacher education department.

A total of 32 students participated in the two international practicums in Ecuador. The first group participated in a three-week practicum in May of 2009. Group One included 18 students with four students in their second semester of a four-semester program and 14 within weeks of graduation. Group Two participated in May 2010. Group Two included 14 students. Eleven were in their second semester of a four-semester program, while three were within weeks of graduation. There were six men and 28 women: 25 were White and one was Mexican American. Students ranged in age from their early twenties to their late forties. Seven students were bilingual, 15 tested at an intermediate level of Spanish, and 12 tested at a beginning level of Spanish.

Students spent mornings in the classrooms assisting teachers as they taught English to classrooms of approximately 18 to 22 students. Afternoons were spent at a language institute where students received additional hours of instruction in

Spanish. The organization that hosted the groups is the Andes Center for Latin American Studies (ACLAS).

All students wrote three reflections while in Ecuador. In the first reflection we asked students to compare what they were seeing and experiencing with their lives back in the United States. The second reflection occurred around day ten of the twenty-one days. Students were asked to deconstruct a critical incident in the first ten days and to discuss it in light of the stages of cultural adaptation (Brown, 1980). During the final week, students reflected on their teaching experiences at the private school. A focus group discussion took place ten to twelve days after students returned to the U.S. Two focus group discussions were held per practicum group to accommodate the geographical locations of students. Because of the focus on White racial identity development, the reflections of the Mexican American student were not included in the analysis.

The data were read and coded according to stages of White racial identity development. Each student entry was coded, and entries were grouped into themes. Two predominant themes emerged in responses that exemplified stages of White racial identity development: those related to classroom management and schools in Ecuador and those related to language, culture, and race. The data analysis was shared with the co-researcher for feedback and then the data were re-read to ensure that there were no missing student contributions. In this study, the two themes will be presented according to stages of White racial identity development.

## Results

Two themes emerged as predominant in our analysis of White racial identity development among preservice teachers in a cultural immersion experience in Ecuador. Theme one is classroom management and schools. Theme two is language, culture, and race. Data contributing to these themes will be outlined below according to each of the six stages of White racial identity development. Classroom Management and Schools

The first stage of racial identity development is contact. Contact is a time of unexamined contact with people of color and/or vicarious contact (e.g., through the media) (Helms, 1995). This may be marked by a color-blind attitude or by a desire to avoid any “anxiety-evoking” racial information (Moule, 2012). In the following quote Diane exhibits a contact level of White racial identity development:

My hike from the hotel to the spa with Joan and Dawn has been my critical incident . . . we got to appreciate the beauty alone and together, quietly and to each other . . . I feel like I have not gotten much out of my experiences at Tomas Moro as a whole. It seemed poorly planned. My teacher had no idea I was coming until I was being passed off to her. I was placed in a class that had three whole days of field trips while we were there. I came in at the end of the unit and watched three exams, 3 three movies, and hardly any teaching.

Disintegration is often precipitated by a moral dilemma concerning race that results in cognitive dissonance (Helms, 1995). There is an acknowledgement that race makes a difference and there may be an initial discomfort with privilege (Moule, 2012). Our students exhibited this cognitive dissonance as evidenced in the following statements. Abby stated:

I did not see teachers differentiating instruction, providing a community feel in the classroom, providing scaffolding of any sort, planning engaging lessons. The teachers did seem to have goals or standards in mind but I have no idea what they were using to assess whether the students had learned the information.

Reintegration is the third stage and is marked by a conscious acknowledgement of White identity. Many student comments fit this category. However, this identity is seen as superior to people of color: Often “any residual feelings of guilt and anxiety [from the dissonance in the previous stage] are transformed into fear and anger toward [people of color]” (Helms, 1995, p. 60). Kate stated:

When I asked the teacher what she does about students, like the young girl, who were off task, she said “it is not my responsibility to teach students who do not want to learn.” She then scolded the student and said “She (and named the student) does not care to learn, so why should I bother teaching her?” She said this loudly enough to make an example of her in front of other students. This goes against everything that morally and ethically I believe in as an educator.

Diane said:

The differences in schools between Quito and the US far outweigh the similarities . . . I am kind of appalled by some of the differences. First and foremost, students in Quito had no respect for their teachers . . . The teachers don’t set up boundaries and don’t require the students to pay attention and do their work. In our country, students have been trained in this nature for their entire educational career. By the time they’re in middle school and high school, it is an expectation.

In the fourth stage, pseudoindependent, we find the students redefining a White racial identity. In this stage, Whites begin to understand racism and their role in it, but this is an intellectual awareness only. A person might espouse a liberal ideology, but it may not be emotionally integrated (Moule, 2012). Our students exhibited elements of this stage as evidenced in the following statements. Abby said:

The classes though are often very chaotic. The students shout out, talk when others are talking, and waste a lot of time sitting or playing with their friends. From talking with other students at my Spanish instructor at ACLAS I believe this is more of a cultural thing and not specific to the teacher and classes I am working with.

Carla said:

To begin with, classroom management was nearly non-existent. When I asked what rules were in place, I was told that they followed the rules of the school; no rules had been set inside the classroom. Students listened to their iPods, ran in and out of class, and spoke frequently in Spanish (when they were supposed to be communicating in English), which made it very difficult to teach in this environment. Once I spoke to the teacher I was working with, I realized that no formal teacher training was required to teach there—they were not equipped with the strategies we were taught about. Instead of being angry with the students for being disrespectful, I felt sympathy with the teachers who were not taught how to manage a classroom.

Immersion-emersion is a time when Whites seek a re-education and a personal understanding of racism and how one benefits. This may be the result of feeling rejected or isolated in some way (Moule, 2012). Elizabeth expressed her experience of immersion-emersion following a rather hectic field trip:

I was in shock that we had just spent over two hours with these children and the only instruction they had received was a five-minute clay modeling demonstration. They were not even allowed to touch the clay. Most of the time, the children ran free. As I looked at the equipment, I was sad for the children. The disparity between the beautiful parks I had taken my son to and this one was disturbing. I realized I would never let my own son attend this school. I would have been outraged and removed him the first day.

Autonomy is a time of “internalizing, nurturing, and applying the new definition of whiteness evolved in the earlier stages” (p. 62). This stage is marked by flexible analyses and responses to racial material” (p. 188) and a positive, productive view of

being White. Whites at this stage have developed the capacity to relinquish privilege and prejudice (Moule, 2012). Two of our students demonstrated this flexible analysis in the following reflections. Sarah said:

I think the biggest difference I noticed between teaching at Tomas Moro and in the US was the students behaviors in the classroom. Upon my initial introduction, the students at Tomas Moro seemed louder. They did not raise their hands, there was a lot of shouting, and students would get up out of their seats whenever they pleased. Observing this behavior from an “American” perspective, I felt like the students were being disrespectful. In the end though, I don’t feel their behavior was rude because the teacher didn’t interpret it this way. This was normal classroom behavior for these students and their teachers. This makes me realize that showing respect is relative to the culture you are in. Once I got [past] the change in classroom culture, I was able to begin processing the benefits of this type of environment. Allowing students to speak out seemed to encourage participation in classroom discussions.

### Language, Culture, and Race

Contact is that initial phase of unexamined contact with another culture. It is often marked by a desire to avoid anxiety evoking racial information. The following reflection is a strong example of the contact phase around the theme of language, culture and race. Diane said:

I love the community-centeredness of this culture, but it is a little overwhelming . . . Joan lent me her iPod and Dawn encouraged me to just take some time by myself. I didn’t feel well right away, but that alone time was so refreshing and encouraging . . . we have to acknowledge our personal truths in order to function at our best...”

Disintegration occurred regularly around the theme of language, culture and race. Disintegration is an acknowledgement that differences exist. It may be characterized by some initial discomfort with White privilege. In a strong reflection that highlights disintegration, Leah stated:

First, let me say that being in a language minority is a horrible feeling. It’s constricting and binding, emotionally draining, and you don’t feel like yourself. This experience has opened my eyes in a way that nothing else could have.

Heather said:

Not knowing the language, combined with the simple fact that I am extremely white, has certainly made me feel as if I stick out like a sore thumb during most of my visit to Quito. Every time I venture to a store or just walk outside, I feel extremely conspicuous. Since I am small and fairly unremarkable, this is definitely not a feeling with which I am accustomed! I have felt like an “idiot gringa” more times than I can count, and I am now extremely comfortable with the feeling.

In a debrief session, Mindy shared how physically uncomfortable she was in Quito. She is 5’9” and blonde. She referred to herself as a blonde Amazon and described her need to “squish down in my chair so that I did not stick out in church or the theatre.” In a similar debrief session with Peggy, she shared an experience she had at dinner in her host family home. She had connected deeply with her host family and the two families had been introduced via email and Skype. She was very comfortable with her host family until the final week. At dinner one night, her host father was explaining that his two grown children had two very different political stances. One was a Communist and one a Socialist. She was appalled. She asked him how he could have a Communist in his family. As she told the story, she was flushed and recalled it with growing disequilibrium. She said, “He said that his son was really engaged in working for the rights of indigenous people. He wants them to have training in literacy and jobs. He said it makes sense to him and that the Communists are the only political party concerned with the welfare of this group of

the poor.” She went on to ask the faculty member from the U.S., “How can this be? How is it that the Communists are the ones working for the things I value?”

Our students experienced reintegration. They began to consciously acknowledge their own White identity, and guilt or anxiety about judgments regarding race were often transformed into fear or anger or shutting down completely. Here is a sample of their thoughts. Lori described how her host mom talked about language use among vendors in the market:

“A majority of them speak English and if they pretend that they don’t, they are lying to you.” So I’m going in there going all right they’re going to speak English so we’re going to barter in English. I’m walking around with her and she goes, “Speak Spanish.” I thought they know English? “No they don’t, quit speaking English!” I’m like, I give up, I’m done speaking Spanish, I’m done trying.”

John stated:

Honestly I don’t feel like I belong here because of my skin color and the fact that I am a 300-pound man walking down the street in a place where there are not very many obese people. I have no idea how I am being received as an American walking down the streets being stared at and just what are they thinking of me? The same can be said for them as well. I look at all the different people around and wonder just what in the world do all these people do to stay alive and for what purpose.

Pseudoindependent marks a redefining of White racial identity. It is an intellectual awareness that may not be emotionally integrated. In the following reflections, you will see a redefining of racial identity that is occasionally emotionally integrated and often not. Susan described having a big lunch with her host family and her inability to understand the language:

This day left me frustrated and feeling sorry for myself. I was upset that I couldn’t understand more. After emailing my mother about my day, I got a new perspective. She said to me (my mom is a former ESL teacher), “Now you know how your ESL students feel. Your family wasn’t ignoring you, they just probably didn’t know how to engage you in the conversation.” Well, she was right. I stopped feeling sorry for myself and looked at it from her perspective. Now I will (hopefully) be able to feel empathy for my English Language Learners and understand some of what they are going through.

Megan said:

This trip has completely changed how I feel about language minorities in my classroom, whether it is language minorities, socioeconomic minorities, or even mentally handicapped minorities. I may not feel the same as my minority students, but I think the first step towards bridging a gap between the two is understanding where they have come from and caring.

In this phase, Whites seek re-education and a personal understanding of racism and how one benefits from racism. This stage may result in feelings of isolation or rejection. Our students gave evidence of this stage in the following reflections. Megan stated:

The feeling of alone-ness has really played a heavy part in this trip and has made me think about my future students. While I have support of my fellow travelers and I will eventually go back to a place where I don’t feel alone at all, what about my students who don’t have such luxuries? What about my students who everyday have to battle with feeling alone in a foreign country, in a foreign culture, in a foreign language? How will I reach out to them and make them feel just a little bit less alone, even if it is only for 40 minutes a day?

Joan described an incident on the bus when a man walked up the aisle handing out candy. Joan’s host sister leaned over to her and said, “He will try to hand you candy, but it’s not free and you don’t have to take it.” In reflecting on the incident, Joan observed, “What a relief to have that kind of direct cultural instruction.” She then reflected on the implications for her classroom teaching:

I can’t expect that students know how I expect them to conduct themselves in class conversations. I can’t expect that they know what I consider “polite” or

“rude” body language. I can’t even expect that they know how to label a paper to turn in or what is considered “late”. All of these expectations can be established through just the kind of direct instruction that [my host sister] provided for me on that bus.

In autonomy, there is an integration of the earlier stages. There emerges a new definition of whiteness and a positive and productive view of race. At this stage, individuals can relinquish prejudice and privilege. Exhibiting signs of autonomy, Jane said:

As I spend quiet moments thinking about my experience here, I regularly think back to what this means to me as a teacher. After three years of working in an ESOL department and 16 months of an ESOL endorsement, you would think I was 100% prepared to teach English Language Learners—I know I did. What my job and studies could not show me was the first hand experience of being a minority and a second language learner in a whole new culture. My time in Quito has shed new light on what it really feels like to be a language learner, and it makes me even more sympathetic and understanding of what my ELLs (English Language Learners) go through on a daily basis for weeks, months, and years at a time. . . . this experience makes me more determined to provide students with as many real life and hands on experiences as I can.

Beth stated:

I think different people react differently to culture shock—some with over-enthusiasm, some with fear, some with skepticism. Some is determined by personality, some by past experience. After [my experiences in] Saigon, I tend to have a laid back “whatever” goes approach . . . . I think this mainly because I don’t believe in absolutes—absolute right, absolute wrong—at different points in history and in different cultures I think different ways of doing things are necessary for survival.

### Discussion

The stages of White racial identity development were identified in preservice teachers experiencing a cultural immersion experience in Ecuador. Within two themes, classroom management and schools and language, culture, and race, these stages will be analyzed according to stages of White racial identity development.

Experiencing schools in Ecuador caused disequilibrium in many preservice teachers, but how they processed this disequilibrium differed. Some, upon further analysis, found that that school experience to be quite similar.

Diane seemed to brush off her experience at Tomas Moro as insignificant. She critiqued the planning and found little value in what she observed. What she really seemed to appreciate was the time she spent on a hike with classmates from the U.S. This exemplifies the *contact* stage, a time of denying differences and avoiding any anxiety differences may cause (Moule, 2012). Diane’s growth continued throughout the trip. By the conclusion of her time in Ecuador, she was noting her changing strength in self-efficacy. She noted that individuals who do not look like her or speak her language seemed to like her. She decided to apply for a teaching job in another state where the diversity is much stronger. She is currently teaching in a high school with strong racial and linguistic diversity.

Abby noticed many differences between schools in the U.S. and Ecuador. She noted concerns about schools in Ecuador but also acknowledged things that were going well, such as the fact that teachers seemed to have goals in mind. These comments fit the *disintegration* stage well: She noticed differences and was bothered by it. However, she did not show a favoritism for the U.S. system in a way captured by students in the next stage. Peggy was initially disturbed to find she shared goals with Communists. During the weeks after re-entry into her own culture, she found herself questioning her culture and pondering political ideology.

Several students made comments about Ecuadorian schools that exemplified the *reintegration* stage. Carla noticed some good things and not so good things. Adding the comment, “I am happy to teach here in the States versus there!” shows an attitude of superiority for the U.S. system (Helms, 1995). Carla continued to work between stages of *reintegration* and the *pseudo-independence*. Kate, Lori, Patsy, and Diane shared this favoritism, using superlative language to describe the “appalling” differences in Ecuador. Their observations were value-laden and not complimentary towards the schools, teachers, or students in Ecuador.

There were students who grappled with the differences in such a way that they were able to begin to take a step back and examine them with a more balanced view. Abby acknowledged that the “chaos” in the classes may have been cultural and not necessarily a problem with the teacher or classes with whom she worked. After stating that classroom management was “nearly non-existent,” Carla went on to state that she learned on the trip that many of the teachers in Ecuador did not have the advantage of formal training. She began to see a piece of a larger puzzle than the initial behaviors that were so shocking to her. Amy had the advantage of working with two teachers, one who had, in her view, effective classroom management skills and one who did not. This gave her the advantage of seeing the Ecuadorian schools in a more nuanced way, as opposed to making generalizations based on one classroom experience. In each case, the responses represent the *pseudo-independent* stage, a time of beginning to understand difference in a complex way (Moule, 2012). However, in the case of Abby and Carla, they come about the difference in a condensing and/or detached, impersonal way.

Despite the short duration of the trip, there were students who responded in ways that represent the *immersion-emersion* and *autonomy* phases. Elizabeth was shocked by the poor conditions of schools and playgrounds and made a personal connection to her privilege and to what she would tolerate for her own child. This represents the *immersion-emersion* stage, a time of making personal connections to difference and to one’s own privilege in the world. Despite their classmates’ many strong objections to what they saw in Ecuadorian classrooms, Kate and Sarah found the schools to be remarkably similar to those in the U.S., even preferable in some ways. Kate was impressed by how independent the children were, and Sarah analyzed the benefits of how students shouted out in class—how this would benefit them as adults. Those at the *autonomy* stage are able to analyze cultural differences flexibly, as these two students did concerning school differences. They were also able to examine privilege, as Kate did when she considered the types of students who are privileged and oppressed by certain school expectations.

Not surprisingly, the preservice teachers on the cultural immersion trip noticed many cultural differences, as well as language challenges and what it feels like to be the racial “other.” Their responses to these differences varied. When it came to this category, Diane once again seemed to avoid acknowledging any emotions related to the trip. She instead discussed how nice it was to borrow a friend’s iPod and to have time to herself. This represents the *contact* stage.

Several students were struck by how difficult it was to not know the language and to not be able to truly fit in. They experienced the *disintegration* phase in various ways. Leah felt extremely constricted being in the language minority, like she could not be her true self. Ginny contrasted her experience in Ecuador to her time studying abroad in Italy. Unlike Italy, where she knew the language and fit in racially, she felt like she could not assimilate in Ecuador no matter what she did. Heather discussed feeling like an “idiot gringa” for not knowing the language and because of her fair skin. Mindy described herself as a “blonde Amazon” and experienced great discomfort with her inability to fit in.

Some students fell back on their preference for their home culture and judged the Ecuadorian culture as inferior, representative of the *reintegration* stage. Lori was very frustrated when she received mixed messages from her host mom about speaking Spanish in the market; thus, she gave up trying. John shared quite a few observations and comments that seemed indicative of taking in the sights, sounds, and experiences and deciding that the U.S. was better. He mused about the purpose of “all these people” living, which showed a lack of respect for the Ecuadorian people. He also discussed this in terms of Maslow’s hierarchy of needs, explaining that because their basic needs were not met, there would be few Ecuadorian people who would reach the stage of self-actualization. This demonstrates the potential hegemony that exists in the educational theories taken as truth in Western culture, something John took for granted, in large part due to his education in the U.S. Finally, he took in the experience of the begging he saw and spent quite a bit of time wrestling with it. In the end, he fell back on his Christian belief that these problems will just exist until Jesus returns.

Several students began to examine the differences and privileges they experience in the U.S., although their thinking may still be in an intellectual phase only. This is representative of the *pseudo-independent* stage. Kate said that her time in Ecuador made her want to better understand global issues, such as poverty and children without parents. Susan said that while she felt sorry for feeling left out, her mom helped her to see how her own ELL students might feel back home. This led to a better intellectual understanding of where her students might be coming from. Finally, Megan said that the trip had greatly changed her view of students who do not speak English, as well as students from a variety of backgrounds. She is correct to note that the first step is this understanding. Students in the next phase may have moved into a point of personal integration of this new knowledge.

Megan, Emmy, and Joan experienced the same disequilibrium as the other students, and began to make connections to their own lives and teaching, a hallmark of the *immersion-emersion* stage. Megan related her feelings of loneliness to how her immigrant students might feel. She reflected on the need to reach out to these students. Emmy felt discouraged about her Spanish and was encouraged by her host mother that it really was getting better. Emmy considered how important it will be for her to encourage her own students and to help them feel safe in her classroom. Joan felt like an outsider when her host family spoke Spanish for an extended period of time. Rather than feeling left out or bitter, she felt like she needed to spend more time learning a language as opposed to watching television. She also really appreciated her host sister’s direct instruction about candy on the bus, and she discussed how many of her ELL students would need this type of cultural direct instruction.

The *autonomy* stage is similar to the previous stages but is set apart by the flexibility with which people can deal with cultural differences. Carla was able to see more similarities than differences when looking at classrooms in the two countries. Jane reflected on how well prepared she felt for teaching English Language Learners from her previous work and teacher preparation work and then how unprepared she felt after going to Ecuador. She feels much better prepared and more empathetic. Beth, partially because of previous travel experience, acknowledged her own “anything goes” approach and that so many of the cultural differences are merely that, differences. She finds these differences to be normal and natural as opposed to her own culture being the only “correct” way of doing things.

### Implications and Conclusion

The purpose of this paper was to examine the White racial identity development of preservice teachers during a three-week practicum in Ecuador. The

data confirmed that the immersion experience was a valuable addition to our program. With the exception of one student, all participants in the practicums wrestled with issues of difference in various ways. Even the student who did not seem to engage in the experience in Ecuador went on to experience growth that she linked to her time abroad. Student engagement with diversity was high, and many students experienced growth in their beliefs and thinking. One student who began the experience worrying about how to order a favorite cup of coffee ended her practicum exploring her sense of privilege and questioning why she felt so entitled. Her work continues to question the cultural entitlements she absorbed in her formative years. It is possible that John’s assumptions and biases were reinforced through the experience; follow-up data collection could prove to be enlightening, as this is a caution in the literature about immersion experiences.

Analyzing the data through the lens of White racial identity proved helpful to us as professors. It provided language for the disequilibrium, moments of tension and frustration, and also the acceptance of difference that we saw at various times and in various ways in the participants. We can use this analysis to help us improve the immersion experience on an ongoing basis. We can also use the language of White racial identity development up front with our students who are embarking on immersion experiences. Purposefully teaching the stages of White racial identity development will aid our white students in exploring their experience and analyzing the changes they find in their own thinking, and racial identity development models for people of color can be used with students of color who travel to Ecuador.

It is true that racial identity development has stages. It is also true that these stages are not a linear sequence but instead a circling back, a revisiting, a strengthening. Our students experienced many of the stages of White racial identity development, just as classroom teachers are constantly encountering disequilibrium. Many times throughout their careers, they will share the sentiments in one student’s reflection, “I’m so far out of my comfort zone, I will need a jet to get back.” They have not completed the process. We have not completed the process. The poet Audre Lorde stated, “It is not our differences that divide us. It is our inability to recognize, accept, and celebrate those differences.” In the journey of racial identity, the ability to recognize, accept, and celebrate diversity is one we hope will continue in the lives of our students.

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## OUT OF BALANCE: THE PROBLEM WITH DEVELOPING WIKI RESOURCES TO INCREASE TEACHER CANDIDATES' TECHNOLOGICAL EFFICACY

by

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### Abstract

*The Internet provides tools for educators to collaborate with colleagues to research, assemble, critique, and organize materials for classroom use. Given adequate knowledge and skills, teachers may utilize online communication resources, such as wikis and blogs, for professional communication, collaboration, and construction of informational resources. Structures represent important elements of planning such classroom experiences (Lucey, O'Malley, & Jansem, 2009). The instructor's possession of technological expertise to create optimal environments for students (teacher candidates) to communicate in manners conducive to efficacious task completion represents a premise associated with use of these online tools. Creation of these environments requires relating the users' background knowledge with regard to similar forms of technology, not just the nature of the tool. It also necessitates consideration of the users' willingness and ability to actively seek solutions to problems that may arise. This paper describes a project intended to increase teacher candidates' technological efficacy through development of online social studies teaching resources. The instructors designed the project to provide participants with the opportunity to use their initiative to discover an online technology tool (the Wiki) through practice and to learn about economics through research and collaboration. The results of this project provide information about structuring technology-based student collaborations and developing teacher candidates' content knowledge.*

### Literature

Structuring technology-based learning necessitates consideration of whether or how user confidence in technological ability relates to patterns of instruction. The extent to which one thinks that he or she can master technological skills relates to his or her willingness to develop them, as these beliefs about teaching and learning also work to influence a preservice teacher's decisions utilizing technology (Abbitt, 2011; Ertmer & Ottnebreit-Leftwich, 2010). While there is not a direct relationship between computer self-efficacy and classroom technology use (Wang, Ertmer, & Newby, 2004), efficacy has been found to be a significant predictor of both the employment of and the intention to use technology (Teo, 2009).

Providing preservice teachers with opportunities to work with the technology can help to increase the comfort level of using technology for instructional purposes and enhance their self-efficacy (Magliaro & Ezeife, 2007; Wang et al., 2004). Teachers' confidence in their technological skills may influence concerns about outcomes from technology-based learning (Dunn, Rakes, & Rakes, 2010).

*Teacher training.* Swan and Hofer (2008) observe that "Despite calls for attention to technology integration throughout teacher education programs and particularly in teaching methods courses...there is little evidence to suggest that this approach has been widely accepted." (p. 314). Teacher candidates tend to experience a technology course as part of their program sequence in which they learn and develop the functional skills along with the pedagogical considerations necessary to effectively utilize technology tools for instructional purposes (Lambert &

Gong, 2010). A focus on technology as an instructional tool, as promoted through Morrison and Lowther's (2009) *Integrating Technology for Inquiry (NTEQ)* model, offers an approach for preparing teachers to emphasize the method of technology integration that is easily adaptable. Schneckenberg, Ehlers, & Adelsberger (2011) suggest that competence, knowledge, skills and attitudes, must be developed through direct experiences and cannot be transferred from expert to novice.

Constructivist modeling of technology use by methods instructors has potential to influence student perceptions of technology use, but not necessarily effectively employ it in practice (Diem, 2002; Molebash, 2002, 2004). Nevertheless, teachers persist in implementing one of two instructional approaches, traditional or inquiry, with regard to social studies education with technology supporting either method (Beck & Eno, 2012).

While comfort with instructional technology use represents a factor in its classroom application, Swan and Hoefler's (2008) review of literature finds that "teacher practice is not notably altered by the integration of technology, but rather that technology is most frequently used to enhance or extend existing instructional approaches" (p. 310). Teachers adapt technology to fit within their particular method of teaching. Those who hold a belief that promotes higher order thinking skills and student autonomy for teaching and learning facilitate a student-centered approach essential in powerful social studies instruction (Beck & Eno, 2012). It is important to note that other factors, such as pressure to cover an expected amount of material in preparation for a scheduled exam, can prevent teachers from practicing their pedagogical beliefs (Lim & Chai, 2008).

According to the National Center for Education Statistics (2000), elementary teachers use the computer for daily professional responsibilities; however, small percentages employ it for research-related purposes. Teacher decisions concerning classroom computer use may not represent matters of pure autonomy. Studies (e.g., Bennett & Pye, 2003; Gibson & Hart, 1997; Kieper, Harwood, & Lawson, 2000, Lim & Chai, 2008) repeatedly indicate that social studies teachers appreciate the use of computers for learning, but lack the time and resources to create authentic technology-based lessons.

Scholars have recognized the risks and benefits of using technology to foster children's economic learning for some time (e.g., Molnar, 1995; Peracchio, 1992). While much literature concerns the teaching of economics and personal finance and related preparations in K-9 settings (e.g., Johnson & Sherraden, 2007; Schug & Lopus, 2008), there is scant literature that concerns the use of technology to foster economics learning in elementary and middle level classrooms.

It is possible that weak subject knowledge may affect patterns of instructional application if the teacher does not realize or appreciate the value of creating inquiry-rich learning tools for its exploration. Economics represents the least covered social studies area (Kruger, Gandy, Murley, & McConnell, 2009). Yet teachers need reasonably sophisticated knowledge of the content to engage students in these conversations. Elementary teachers possess weak understandings of economics and lack the confidence to teach it (e.g., Grimes, Millea, & Thomas, 2007; McKenzie, 1971; McKinney, McKinney, Larkins, Gilmore, & Ford, 1990; Schug, 1985; Way & Holden, 2009). This lack of knowledge may explain why economics represented only 10percent of the social studies teaching observed (Kruger, et al., 2009).

Wikis are often touted for their facilitation of collaboration (Goodwin-Jones, 2003) and may be used by teacher educators for more than this purpose. For example, Lin (2008) used wikis as showcases for student work. Students in Lin's course selected a technology innovation and explored its potential uses for teaching

and learning. While student groups appreciated the ability to work at their own pace and post information to the wiki at their leisure, they reported dissatisfaction with the inequality of work completed and the issue of building trust and communication among team members.

Solvie (2008) viewed wiki use as an opportunity for students in her reading methods course to authentically collaborate and construct knowledge pertaining to literacy. While students found wikis to be an effective means of collaboration, they focused on the wiki's effect on personal writing and on perception of writing by other group members. In addition, students' perceptions of their writing ability influenced the number of their postings made. Students posted less often if they believed another group member wrote more expressively. Perceptions of writing also affected students' willingness to edit the others' work. There was also a resistance to edit the work of others, as this might be perceived as offensive. Some students indicated that they sought permission from the group member who generated the content before making any changes. Solvie felt this opposition to editing the work of others directly impacted the premise for using a wiki for this assignment. The expectation for editing should be considered part of the collaborative process.

To combat the lag between the publication of a textbook and inclusion of current and relevant information, O'Shea, Baker, Allan, Curry-Cocoran, and Allen (2007) used a wiki to house a student-created textbook for their course in educational foundations. A large majority of the students overcame high anxiety and felt that they were more actively engaged in learning the course material. Students also felt that creating the textbook helped to increase their higher order thinking skills; the ability to apply, analyze, synthesize, and evaluate information. The students found that their wiki textbooks were more current than traditional textbooks, and that their created content was of equal, if not higher, quality and credibility.

As collaboration mediums, wikis provide opportunities for professional interactions, which may provide benefits for local or global education communities. Building a wiki as a collaborative venture served as an ideal opportunity to develop the desired competence (Schneckenberg et al., 2011). If authentic use of instructional tools represents a mechanism for broadening student content knowledge, then genuine use of technology resources could also broaden in-service and teacher candidates' content understandings.

Experiences with technology may cause teachers to be more technologically efficacious; however, the limited content knowledge and limited professional planning time may prevent the use of technology for fostering engaging learning that builds deep social studies knowledge. The herein described project employed wikis to facilitate teacher candidates' development of social studies teaching resources. The purpose of the assignment was to interpret the content of online wiki social studies resources developed by the teacher candidates.

### Methodology

A semester-long project included teacher candidates enrolled in one of three elementary social studies methods course sections. It intended to build from their technological efficacy to create a social studies technology resource that they could supplement and draw from in practice.

The teacher candidates were enrolled in three sections of a spring semester elementary social studies methods course at a public Midwestern teacher education institution in a mid-sized community. The researchers deliberately structured the assignment process to provide for heterogeneous groupings, with regard to their course sections. The project aimed to use the collaborative features of the wiki to facilitate cooperation between different sections of the course. Candidates

would not physically see each other during the semester. Prior to the course, the researchers/instructors randomly assigned enrollees to one of five wiki groups (10 or 11 in each group) and instructed the teacher candidates to organize themselves into pairs, with each pair responsible for a wiki chapter. Groups that had 11 members decided whether the unpaired person would serve as a chapter contributor or a wiki rover, who could edit any chapter that needed support.

Knowing that experiencing success is an important influence on self-efficacy (Bandura, 1977), the researchers chose wikis as the instructional tool. The researchers incorporated a wiki-based assignment to provide candidates with opportunities to explore wikis as a classroom teaching resource. Wikis have a low learning curve with many online support sites and networks. Since they are free web-based tools and used at all educational levels, their affordability and accessibility provided the opportunity to experience wikis' potential for educational use, increasing the possibility that candidates would understand how to integrate it into social studies content (Butler, 2012).

The project facilitated candidates' collaboration in the development wiki resources with a minimal amount of instructor guidance. The instructors expected candidates to locate the host wiki website, set-up their own wiki, invite their members, design the pages, and develop the content. Candidates received guidelines for content and a series of deadlines by which to post their information. There were not any specific content requirements associated with each deadline; candidates were expected to discipline themselves to make postings to fulfill the established expectations for the final product.

The instructors structured the assignment in anticipation that candidates would develop and demonstrate the ability to become self-regulated learners of web-based tools. Instead of receiving direct instruction on a particular tool, candidates were to explore, investigate, and utilize online help support resources along with their other group members.

This project employed two sources of data for analysis: (1) the wiki chapters developed by the candidates and (2) surveys about candidate views that concerned technology use and social studies teaching.

*Instrument.* At the end of the course, students were surveyed about their use of technology and their confidence teaching various social studies areas. The authors constructed the 20 item survey, which phrased items positively and negatively to prevent spurious response patterns. The instrument formatted these items using a Likert-style response scale that contained four levels ranging from Strongly Disagree to Strongly Agree. It contained two other items that invited respondents to indicate the social studies areas that they had the most and least confidence teaching. The survey also included four open-response items that concerned the nature of social studies, social studies instruction, citizen development, and technology in social studies teaching.

Of the five pairs of students who developed economics chapters, four (80 percent) consented to the analysis of their work. To discern students' understandings of economics and its teaching, the authors reviewed the chapters' content in relation to the assignment guidelines. For purposes of this paper, statistical analysis is limited to descriptive analysis of relevant items. The presentation also includes responses to open items, which were coded for apparent themes by the first author.

## Results

This section organizes findings into two parts. The first concerns analysis of content contained in the wiki chapters. The second relates findings of candidates' survey responses.

Findings from the analysis of the chapters by the four consenting groups (Rowdy Renegades, Eleven Again, Disturbing Damsels, and Spunky Sparkers) are presented below. These findings are organized by the required topics (1) What is the nature of your social studies area? (2) Why your topic is important for students to learn? (3) What has happened to the teaching of your subject? (4) Why do you think your topic is left out of teaching? (5) How do you remember learning about your topic in elementary school?

*Nature and importance of economics.* None of the chapters truly described the nature of economics. The group Rowdy Renegades provided a definition before they discussed the relevance of economics to children's learning, and the group Disturbing Damsels simply provided a quotation from their text. The group Eleven Again considered economics an essential element of knowledge; however, identified it as all-encompassing, without clarifying its substance.

Three of the four wikis construed the importance of economics as involving consumerist foundations. The group Rowdy Renegades considered economics as relevant to daily living. The group Eleven Again viewed the importance as related to consumer behaviors. The group Spunky Sparkers employed economic terminology (i.e., economy, money, inflation) to support its explanations of importance. The fourth wiki provided quotations from sources; however offered no actual explanation of the subject's importance.

*Teaching Approaches.* Of the four wikis, three (Rowdy Renegades, Eleven Again, Spunky Sparkers) considered how economics had been taught in the past. The group Rowdy Renegades disclosed that economics education should begin early. The group Eleven Again reported that economics education had received increasing emphasis in younger grades as children became more independent. Spunky Sparkers observed that technological advances had affected patterns of financial practice and extended these observations to technology use in instruction. A fourth group, Disturbing Damsels took a child development perspective and disclosed that economics begins with the concept of scarcity in early grades and grows to political economics in later grades.

All four wikis contained content that interpreted recent trends in the teaching of economics. None of the four provided the same explanation. One reported that it was marginalized and is not being taught. Another disclosed that economics is becoming evident in lower grades as it is becoming *more than financial jargon*. A third erroneously reported that it has not been taught before and now represented a topic of interest that involved various professional groups and resources. The fourth identified changes in economic education as associated with increased sophistication with technology.

Despite these differences in interpreting the changes in economics education, three of the four wikis contained similar explanations for why it has been marginalized, attributing its de-emphasis to insufficient planning resources and standardized assessment requirements. The group Disturbing Damsels provided some consideration to economics' curricular absence; however, did not explore the reasons for its disappearance.

Memories of economic learning were blasé, with three of the four wikis providing comments. Two wiki groups, Rowdy Renegades and Eleven Again, had no memories of economic learning in their experiences. The group Disturbing Damsels did not address the topic. Spunky Sparkers associated economics learning with mathematics worksheets. Table 1 provides a clarification of the aforementioned findings.

**Table 1:** Summary of Economic Chapters' Content

	Rowdy Renegades	Eleven Again	Disturbing Damsels	Spunky Sparkers
Nature of Economics		Not truly considered.		
Importance of Economics	Daily living	Consumer Behavior	Quotations. No articulation	Money, Business, Inflation, Globalization
History of Economics Teaching	Should begin early in life	Increasing emphasis as children become independent	Begins with scarcity and becomes more complex	Increasing technological use.
Why Marginalized	Not enough time for sufficient coverage	Not part of testing	Explains that it is marginalized, but does not explain.	Test scores
Memories of Economics Learning	None	None	None	Math Worksheets

*Student technology confidence.* One survey item prompted enrollees to convey their agreement with the statement, "I am not confident in my abilities to teach about how people organize for the production, distribution, and consumption of goods and services." All 48 enrollees who completed the survey responded to this item, with 12 (25.00 percent) either strongly disagreeing or disagreeing with the statement. To put it another way, only one-fourth of the students responded that they agreed they had confidence teaching about economics.

Of the 48 participants who completed the survey, 46 indicated the social studies area in which they had the most and least amount of confidence. Only three (6.52 percent) respondents chose economics as being the area that they had most confidence teaching. Conversely, 27 (58.70 percent) respondents selected it as being the subject of which they had least confidence. These results are consistent with findings that economics may not be the social studies area of choice among elementary teachers (Kruger, et al., 2009).

*Open response.* The survey contained one open response item that concerned technology use for social studies teaching. Of the 48 students who completed the survey, 38 (79.17 percent) wrote a response to the prompt, *How (In what ways) can technology facilitate and/or enhance student learning of the social sciences?*

Coding revealed five candidate comment themes. These themes were (1) use of technology to increase student learning or knowledge; (2) use of technology for conceptual enhancement, (3) use of technology tools, (4) use of technology for activities, and (5) use of technology purposes of engagement, management, or connecting with learners. There were four responses that did not fit into any of these categories.

The most prevalent theme (11 of 38 or 28.94 percent of respondents) concerned technology use as a vehicle for increasing student learning or knowledge. Candidates that articulated these ideas recognized the importance of technology use, but did not expressly state how it would be used. For example, one student commented "Technology allows a classroom to explore (social studies) in such a unique way." Another wrote "Technology use enhances learning and deepens students' understanding." Finally, another remarked, "Broaden learning and teaching experiences for students." These comments indicated recognition of the

potential for technology's enhancement of social studies learning; however, they lacked the effort to interpret how such betterments occurred. They simply stated that technology or its use improved knowledge.

The second most comment theme (9 of 38 or 23.68 percent of respondents) concerned technology as a mechanism for conceptual enhancement. These comments went beyond the learning or knowledge comments such that they provided specific explanations for how the technology improved the content presentation. Technology's ability to enhance students' visualization of content represented a recurring observation among these respondents. For example, one student commented that technology "takes learning further by creating a visual of the content." Another wrote that technology "Helps display information in a new way." Finally, one other student wrote that technology "enhances content by making it more appealing and available." All of these comments relate to the visual appeal that technology offers for presentation of social studies content.

The remaining responses excepting four, which were uncategorized, fell within three themes, use of technology tools (5 respondents), use of technology for activities (5 respondents) and use of technology purposes of engagement, management, or connecting with learners (4 respondents). Comments within the first two above themes identified particular technology tools or processes for classroom use. For example, Google Earth, web quests and virtual field trips were tools or devices identified. Concerning processes, candidates employed nonspecific jargon, such as hands-on and interactive activities to describe instructional approaches for technology implementation. Comments, which concerned classroom processes, repeatedly referred to student engagement as a technological benefit.

## Discussion

The analysis determined that the economic chapters portrayed the nature of economics differently from each other, and presented the teaching of economics similarly. All stated that standardization processes marginalized economics teaching. The following discussion is organized by interpretation of the wiki content and their construction process.

None of the chapters interpreted the nature of economics absolutely or completely, and none of the chapter authors truly used their own ideas to address the topic. Grossman and Schoenfeld with Lee (2005) point out that classroom content knowledge involves different elements than broadly understood. The information is shaped or modified by teachers for students' comprehension. The findings of this study indicate that chapter content reflected participants' difficulties articulating sophisticated content understandings.

This assignment presented a challenge for enrollees because it required them to shape the researched information in ways that would be professionally meaningful. Participants could not simply compose as they wrote. Rather than reflect and post information that enrollees would process and publish spontaneously, they were expected to process information from outside sources into a more formal context and to decide upon the visual representations of that information. Participants experienced challenges processing the information for their resources' development.

Because of enrollees' weak content knowledge and their difficulties thinking at higher levels, they incurred difficulties visualizing development of chapter information. They lacked a visual goal to pursue. The assignment guidelines were conceptual. There was not an example to follow. Students were expected to collaborate and develop a project to the mutual agreement of the group rather than individually copy an instructor's model.

Economics chapter content depended largely on quotations or definitions. Anecdotal evidence indicates that students recognized the efforts to prompt their higher level thinking; however, they excused these challenges by claiming to be unfit. These attitudes indicate elements of learned helplessness or deficit thinking which hindered their willingness to try and develop deep content awareness.

This situation may relate to shallow content knowledge among participants. James's (2008) description of the protectivist attitudes towards history content, which are harbored by preservice elementary teachers, may relate to the aforementioned dispositional challenge. If, as described by James, candidates view teaching of social studies as a process for perpetuating convenient history myths of the dominant culture, it is possible that the same tendencies occur in economics teaching. Such habits of thought may resist critical views of choice-based economic principles and merit-based rationalizations of resource control. They lacked the knowledge and skill to critically interpret the economic content that they researched.

Participants may have been comfortable with the employment of publicly accessible collaboration tools for social purposes; however, the forced socialization for purposes of developing a professional resource disturbed them. The assignment required enrollees' communication with offline strangers, their exploration of new technology, and their negotiation of unfamiliar media to process researched information. This trio of unfamiliarities may have prevented the necessary outreach for successful online community development and task accomplishment. Facilitating opportunities participants with groups to meet and become acquainted prior to their online immersions may have alleviated some of the obstacles to meaningfully completing their assignments.

#### *Process*

Literature (e.g., Lucey, et al., 2009; Waltonen-Moore et al., 2006) describes the patterns of community that may occur through the use of online tools. Online community did not emerge from the current project. This situation may relate to the online tools employed, the expectations for students, and the provided instructor direction.

*Online tools.* Lucey et al. (2009) disclose the importance of structuring community-based technology-based assignments in ways that ensure the development of student familiarity with technology tools. Though their recommendations addressed various aspects of the lesson structure; they did not relate the process to the nature of the online instructional tool. While Lucey et al. and the present study employ online collaboration tools, the nature of the assignments required different types of online collaboration tools, and thus prompted different patterns of thinking and interaction among participants. Lucey et al.'s analysis concerned reflection-based communications of graduate students within a blog. The patterns of communication were open and personal. The participants were not required to post particular reflection content and medium did not allow for participants to edit each other's work.

In contrast, the current study required participants to construct wiki chapters, seek information, format pages, and structure content. Communications among participants within the wiki required use of separate wiki tools such as the discussion feature, in addition to resource posts and edits. Related communications may have also occurred through outside mediums such as Instant Messenger or through face to face meetings. While the processes that required students to complete an assignment was designed for the appropriate online tool, the number of processes and the challenges that they presented to students impaired the content development. Students wanted easy processes, and did not avail themselves of the tools that wikis offer, such as discussion boards and revision tracking. Blogs are direct communication outlets in which it is easy to write and post, require no collaboration, and produce an individual product. Wikis have more features that require more user time and attention but accommodate collaboration. The students were not comfortable with the new technology and resisted the opportunity to use it to its fullest potential. While this situation represents an initial aversion to a new social medium, it may also indicate a passive disposition toward learning. Expectations for traditional instruction, which could have detailed how to manage the online tool, may have hampered their willingness to become proactive learners. The challenge of researching economic content of which the participants likely possessed tentative knowledge presented additional planning difficulty.

*Expectations for candidates.* The instructors structured the assignment to allow for student autonomy and flexibility in scheduling their processes and to encourage student-initiative. The assignment provided dates by which students were expected to post content; however, did not require posting of specific information for each due date.

Students expressed feelings of dependency, seeking precise guidance and direction. This situation may have resulted from their lack of familiarity with the online tool and from their inability to recognize its value in their professional practices. While the current study did not collect information about students' attitudes concerning the use of wiki resources before the assignment, data were collected about students' perceptions of wikis immediately after the course. While it cannot be attributed specifically to the use of a wiki as the tool, 79.17 percent agreed or strongly agreed that they are confident using technology as a tutor and 77.08 percent agreed or strongly agreed that they are confident in their abilities to empower students' technology use. This high level of computer efficacy was achieved despite the fact that 68.08 percent felt overwhelmed at the prospect of teaching social studies using 21<sup>st</sup> century technology.

The researchers administered an online survey to candidates at the completion of candidates' student teaching (one semester after completing the course assignment). Of 43 students asked to complete the online survey, 12 (27.91 percent) responded. With one exception, none of the students used the resource during their student teaching and none recognized the professional value of the wiki. It is possible that the effort to learn the tool may have dampened candidates' enthusiasm for researching and editing the content. The benefit of traditional instruction, in this situation, relates to the teaching the skills to negotiate the wiki, thus allowing more focus on the research and development of chapter content.

*Instructor direction.* The assignment was largely void of instructor feedback until the end of the term. The instructor of one section did provide a check off sheet for the required elements of each chapter. No feedback was provided on the quality of the submissions, just the presence or absence of information. Grading was based on the final content contained in the chapters and balance of participation. The candidates possessed responsibility for regulating the resource construction. This situation presented a challenge for candidates who expected regular guidance and feedback about the direction of their pursuits; however, posed less stress for the independent.

It was expected that the online communities would provide the support and positive reinforcement needed to bolster development efforts. Elements of frustration are evident within the content described above (e.g., efforts to define economics rather than explain its nature). Future project efforts should provide a model for the students to refer to as they develop their products. Though the assignment provided students with the latitude to be creative in developing the final chapters, it did not give them the direction needed to interpret what instructors expected. Regular instructor feedback about the content could have alleviated this situation somewhat. For example, encouraging efforts to look deeper into content, reminding candidates to paraphrase sources and devise their own views, and prodding candidates to address the specified prompts, rather than using common sentence stems could have generated more favorable content from which candidates would draw.

#### **Conclusion**

While the researcher initially perceived candidates as being technologically efficacious, social and content challenges within the project hampered candidates' resource development. The chapters portrayed the nature of economics differently from each other, and affirmed that marginalized economics teaching resulted from standardization processes. This work indicates that while technology-based constructivist learning may represent a tool for fostering learning about economics and personal finance, its facilitation of student-centered cooperative processes for technology learning require student comfort with content and social considerations to affect productive processes. The results of this project indicate that the nature of the

technology tool, the degrees of student expertise, and nature and amount of teacher involvement all contribute to learning outcomes. Additional research needs to examine the interactions among these components and their relationships to technology-based economic learning.

The paper described a method for both increasing teacher candidates' understandings of economics, and comfort with various technology tools. Despite the frustration of students in their creation of the wikis, through the process, students did develop familiarity with online wiki tool and considered economic content and teaching. Refinement of the resource assignment to provide more instructor guidance through ongoing content analysis and feedback may motivate student resourcefulness.

The work offers a basis for conversation about structuring online collaborations that optimize learning for all participants. The contrived nature of the assignment, combined with student learning of the online tool, lent to an assignment structure that guided students through the process. Yet either students' limited background knowledge and/or their technological inefficacy limited their initiative. For online collaborations that develop resources to be successful, instructors should consider an appropriate mixture of instructional guidance and student autonomy.

Finally, the project offers an opportunity to review student work products and share ideas about their views of economic content. While the construction process met with a number of difficulties, the chapter content presents similarities and differences in the participants' interpretations of economics and related teaching and learning. The comparatively small amount of instructor guidance allowed for student interpretation of chapter content consistently with their personal contexts. Thus, it provides a benchmark for interpreting the economic knowledge and research resourcefulness of elementary teacher candidates while providing an opportunity for future revisions by future classes.

In a standardized education environment, which emphasizes factually based learning, little tolerance for alternative social interpretations occurs. This paper conveys how the use of an online learning tool may represent a vehicle for developing different interpretations of economics and related teaching and learning processes. In a capitalist environment, which rationalizes a crisis of global warming and national resource depletion, different interpretations of economics and related theory offer hope for the future. Teacher educators face the problem of how to prepare candidates to (1) appreciate broad social studies conceptions, (2) articulate these understandings, and (3) integrate them into authentic learning opportunities.

Preservice teacher development of wiki resources provides promise for developing teachers' technological efficacy. While it is recognized that the content of wikis in this project involved substantial disappointments, additional instructor direction may have addressed this situation. Striking a balance between complete autonomy and overbearing supervision may provide the common ground to harness the creativity needed in preservice and in-service teachers' development of resources to support their development of critically thinking global citizens.

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## THE DEVELOPMENT OF PRE-SERVICE TEACHERS' SELF-EFFICACY BELIEFS

by

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### Abstract

*The primary purpose of this study is to evaluate the effectiveness of an educational psychology/secondary methods block course in a teacher education program through an examination of the change in pre-service teachers' self-efficacy beliefs. Participants were approximately 321 secondary pre-service teachers enrolled in a secondary methods/educational psychology block course in a Midwestern university. Participants rated their degree of confidence in their current ability to perform each teaching task by recording a number from 1 (cannot do at all) to 6 (highly certain can do). Results, subsequent administration, and recommendations to improve block-course effectiveness will be addressed.*

It is common practice among teacher education programs to examine their effectiveness in preparing their students for an ever-changing classroom environment (e.g., Moseley, Reinke & Bookout, 2002). In this study, we were interested in determining the effectiveness of two blocked courses (secondary methods and educational psychology) required by the university's secondary teacher certification program in preparing students to become effective teachers. This paper describes the first stage in the development of an instrument intended to measure the self-efficacy beliefs of pre-service teachers enrolled in a two-course secondary methods/educational psychology block at a midsized Midwestern public university.

Students enrolled in the block course meet five days per week, one hour and fifty minutes per day, for nine weeks, typically during the end of their junior year or beginning of their senior year, i.e., one or two semesters prior to their final student teaching experience. Students receive instruction in secondary methods on Monday and Wednesday, and in educational psychology on Tuesday and Thursday, with the two classes meeting on alternating Fridays. During the last six weeks of the semester, students are placed in area schools for approximately two hours per day with a cooperating teacher in their major field of study. During the practicum, students participate in various authentic teaching tasks and must complete a full-period lesson that is observed by a trained supervisor and is video-taped for review and analysis by the student. During the two semesters following this experience, students typically complete their teacher education program by taking content methods courses and student teaching.

The development of this instrument stems from our perceived need to have more tools to help us determine course and program effectiveness and to make needed adjustments to better serve enrolled students. Indeed there, is no paucity of measures of teaching self-efficacy. While there are a number of measures of teacher self-efficacy (Tschannen-Moran & Hoy, 2001), and Siwatu (2007) has created a measure of culturally responsive teaching self-efficacy for pre-service teachers, there exists no measure of broad teaching self-efficacy specifically for pre-service teachers; this may be due to the nature of the concept. Eventually, it is hoped that this study will produce additional discourse about this concept and the development of a valid instrument to measure teaching self-efficacy among pre-service teachers.

### Significance of the Study

An ongoing goal of teacher education programs is to increase teacher effectiveness by graduating students who possess the necessary competencies. Especially in the dawn of ever changing state and federal legislation, it is imperative that teacher education programs develop valid and reliable measures of their students' teaching competencies prior to student teaching and ultimately graduation. It is with this concern that we sought to explore the development of such a measure. The purpose of this study is three-fold. First, this study examines and describes the self-efficacy beliefs of pre-service teachers enrolled in an educational psychology/secondary methods block course. Second, the study provides the data that will be used to begin exploring the psychometric properties of a Pre-service-Teachers Self-efficacy Scale (PTSS). Third, this study examines the effect of enrollment in an educational psychology/secondary methods block course on pre-service teachers' self-efficacy.

Although there are many measures of teacher self-efficacy, Bandura (1997, 2006) describes most current measures as lacking specificity. An objective of the present study is to create a measure specifically intended for use with pre-service teachers at the beginning of the block's nine-week classroom portion and at the conclusion of the six-week field experience. Given that these pre-service teachers have no formal classroom teaching experience—and a limited amount even after the practicum experience—we recognize the challenges in attempting to create such a measure. However, a review of the literature convinced us that some measure of self-efficacy will be of help to us as we evaluate our effectiveness in preparing teachers for the classroom. We understand that, ultimately, this will be enhanced with additional measures that follow pre-service teachers during student teaching and into their initial years as full-fledged members of the profession.

### Theoretical and Conceptual Framework

Several studies have examined the readiness of pre-service teachers for the classroom by examining their beliefs about their ability to execute certain academic tasks (e.g. Siwatu, 2007). This self-efficacy, or belief that one can successfully execute a specific task, stems from Bandura's (1986, 1997) social cognitive theory. In this theory, Bandura described human functioning as consisting of personal factors, behavior, and environmental influences all working together in a reciprocal determination model. According to Bandura, humans are not passive objects upon which the environment acts, but rather, they possess a self-system that allows them to have some control over their thoughts, feelings, motivation, and actions. The way that people interpret the results of their performance leads them to make alterations in their environment, and their beliefs about themselves, which in turn leads to the alteration of future behavior and performance. So, if one believes that they can do something, then he or she will make the necessary adjustments to do it. In the same manner, it can be assumed that if pre-service teachers are highly efficacious about their ability to successfully execute a variety of teaching related tasks, then according to the concept of self-efficacy they are in-fact more likely to be successful in those tasks.

Efficacy beliefs, Bandura (1997) cautioned, should be measured "in terms of particularized judgments of capability that may vary across realms of activity" (p. 42). They should also be measured "under different levels of task demands within a given activity domain" (p. 42-43). In other words, self-efficacy beliefs are context- and task-specific, so a high sense of efficacy in lesson planning, for example, among pre-service teachers, is not necessarily accompanied with a high sense of efficacy in classroom-management. However, Bandura also warned about erroneously equating

behavior specificity and domain specificity, describing three levels of generality. For example, at the most specific level, one can measure the perceived efficacy of pre-service teachers to devise and execute a direct instructional lesson plan for a classroom of behavioral disorder (BD) students; at the most general level, one can measure the perceived self-efficacy beliefs of pre-service teachers to devise and execute a lesson plan for a classroom of students.

Several other omnibus measures of personal control, such as perceived self-concept (e.g. Pajares & Miller, 1994) and locus of control (e.g. Lachman & Leff, 1989), have been investigated in the literature. However, their predictive values were generally low or non-existent when compared with self-efficacy. So, due to its predictive value, its popularity as a theory of choice for predicting human functioning, and the overwhelming empirical scrutiny that it has endured and continues to endure, self-efficacy is an appropriate theoretical framework within which an assessment of pre-service teachers' preparation can be examined.

### Research questions

This study was designed to answer the following research questions:

1. What is the factor structure of the pre-service teacher self-efficacy scale?
2. What are pre-service teachers' self-efficacy beliefs about their ability to carry out specific teaching tasks?
3. How efficacious are pre-service teachers about their ability to execute important teaching tasks?
4. Is there a difference in pre-service teachers' self-efficacy at the beginning and end of the educational psychology/secondary methods block course?

### Methods

The data from this study were collected from a convenience sample of 321 students enrolled in an educational psychology/secondary methods course block at a mid-sized Midwestern university during the fall 2010 through the fall 2012 semesters. Most (57.5 percent) were males, 42.5 percent were females, with ages ranging from 19 to 54 years ( $M = 22.3$ ,  $SD = 3.26$ ). Ninety-three percent were Caucasian, 3 percent were Black/African-American, 2 percent were Asian/Pacific Islander, 2 percent were Hispanic and less than 1 percent were American Indian/Alaskan Native. The majority (92.2 percent) were undergraduates, with the rest classified as post-baccalaureate, non-degree seeking students; the average reported grade point average was 3.39 ( $SD = .41$ ) on a 4-point scale. The most prevalent academic majors were physical education (37 percent) and History (14 percent); 60 percent of the participants indicated a preference to teach in a suburban setting, while 32 percent and 8 percent preferred rural and urban settings, respectively.

Each participant provided information about his or her grade point average, race/ethnicity, gender, major, academic classification, geographic setting of the high school he or she attended, the preferred geographic setting for his or her first teaching position, and the amount of major and professional education coursework completed prior to enrollment in the educational psychology/secondary methods block.

We developed a 75-item scale intended to measure pre-service teachers' self-efficacy beliefs about their current ability to carry out a number of tasks typically done by high school classroom teachers. We created the items by reviewing the syllabi and learning objectives for the two blocked courses. Items were grouped by content, e.g., items about formulating questions during a lesson were grouped together. Where feasible, items within these content groups were ordered from easiest to hardest in terms of potential difficulty.

## Procedure

The researchers (one an instructor of *educational psychology* and the other an instructor of *secondary methods*) were trained in quantitative methodology. Both met to discuss the criteria for creation of items. First, both looked at their course syllabi to determine the core domains that are taught for example, lesson planning, classroom management, and motivation. Second, domains in which there was significant overlap were collapsed into one. Then each researcher independently came up with an exhaustive list of items (at least 3) within each domain using Bandura's (2006) recommendation for developing self-efficacy scales. Next, the list was truncated to 75 items and checked for content validity by a panel of about 10 individuals, with expertise in the field of psychology and test development for feedback. These were used to make fine adjustments. In discussing the anchoring influence that the initial items in the hierarchical self-efficacy scale can have on judgment, Bandura (1997) recommended presenting items in either ascending or random orders in terms of task demands. Consistent with this, the researchers presented items within a domain in increasing degree of challenge. Finally, the questionnaire including items for demographical information was administered to participants. The questionnaire appeared to have satisfactory face validity as determined by the reactions of test administrators and participants after administration.

We elected to use a six-point scale to which students could respond. Rather than create a descriptive phrase for each possible response, we chose to create two anchors ("Highly Certain I Cannot Do" and "Highly Certain I Can Do", a mid-point, and three possible response boxes on each side of the mid-point. Participants were directed to place an "X" in the box that most closely represented their current sense of self-efficacy for the given task. While no numerical value was represented on the semantic differential response scale, during data entry responses were coded "1" for "Highly Certain I Cannot Do at All" to "6" for Highly Certain I Can Do," with the intervening boxes coded "2" through "5."

Students in the educational psychology/methods block who volunteered to participate in the study were asked to stay after class on the day of questionnaire administration. Rather than use a traditional paper-and-pencil questionnaire, we elected to create a PowerPoint presentation with each slide containing an item and the response scale described above. We then paced the presentation of the slides at about ten to twelve seconds per slide; our thinking was that this interval would give students adequate time to consider each item, but would also be paced quickly enough to encourage participants to give the rating the first came to mind. Figure 1 presents the slide with instructions to participants. Students marked their answers in a prepared packet; the first sheet contained the background and demographic items, with the 75 self-efficacy item response scales placed on the final five pages of the packet (fifteen items per page). Using this method, students were able to complete the questionnaire in approximately 25 minutes.

## Data Reduction and Reliability

First we utilized principal components with varimax rotation (the default in SPSS 20) to reduce the number of items and identify the underlying structures. Then we experimented with different combinations of extractions and rotations to get to a model that was both parsimonious and conceptually logical. The final model was created using principal axis factoring (PAF) with varimax rotation. The criteria for the item elimination were as follows: low loadings ( $\leq 0.40$ ) on rotated component; items with multiple loadings on other components ( $> 0.25$ ); factors (and their items) with

less than three items loaded. Factors were retained based on an eigenvalue of 1. We also employed scree plots to examine the pattern of eigenvalues for break and discontinuity.

We yielded descriptive statistics for all items on retained factors, to determine relative perception of self-efficacy at the item level. Next, we computed total self-efficacy scores for the 10 factors through summation of all items and dividing by the number of items (Bandura, 1997). Higher scores indicate higher perceived self-efficacy.

Test of difference of means. For this phase of the study we utilized data that were administered during week 1 and week 14/15 of the semester. Participants who indicated that they had repeated either of the courses were deleted and not used in further analysis. The final sample consisted of 261 pre-service teachers. We conducted paired-tests to determine if there was a difference in self-efficacy from first administration (T1) and the second administration (T2).

## Results

This study sought to examine the self-efficacy beliefs of pre-service teachers enrolled in an educational psychology/methods block course. Second, the study provides the data that will be used for the first stage of the instrument development process, the pilot. Mean students' perception of their ability to carry out a variety of teaching related tasks ranged from 3.6 to 5.6 on a 6-point scale (Table 1).

**Table 1:** Mean Perceived Self-Efficacy Scores of Pre-Service Teacher on 50 Items Retained after factor analysis.

Item #	Item Description	<i>n</i>	<i>M</i>	<i>SD</i>
40	Use technology for communication tasks (e.g., email, class web page, or newsletter).	321	5.6	0.77
63	Communicate effectively with school personnel (teachers, aides, administrators).	321	5.4	0.80
39	Use technology for administrative tasks (e.g., attendance and grade book).	321	5.4	1.00
32	Administer standardized tests using provided instructions.	321	5.4	0.96
61	Use effective oral communication with my students.	321	5.4	0.77
41	Discover information about my students' personal (nonacademic) interests.	321	5.2	0.90
37	Use classroom technology to enhance teacher lecture and modeling.	321	5.2	0.91
36	Use technology to prepare materials for classroom instructional activities.	321	5.2	0.92
7	Start a lesson in a way that gets students involved right away.	321	5.1	0.92
72	Teach and model problem-solving strategies for my specific content area to my students.	321	5.1	0.92
42	Use my students' interests to help develop lessons that are relevant to them.	321	5.1	0.91
62	Use effective written communication with my students.	321	5.1	0.90
64	Communicate effectively with the parents and guardians of students.	321	5.0	1.03

38	Facilitate student use of technology to enhance learning activities.	321	5.0	0.95
68	Provide appropriate emotional support to my students.	321	4.9	1.08
69	Provide appropriate social support to my students.	321	4.9	1.06
17	Create questions that help students recall important facts and concepts.	321	4.9	0.91
71	Teach and model general problem-solving strategies to my students.	321	4.8	0.92
44	Use appropriate extrinsic rewards to develop student motivation for learning.	321	4.8	1.01
33	Explain the purposes of standardized tests to students, parents, or guardians.	321	4.8	1.14
67	Help my students cope with various personal or social issues.	321	4.7	1.08
34	Explain the results of standardized tests to students, parents, or guardians.	321	4.7	1.19
04	Create a lesson plan that mostly uses student cooperative learning activities.	321	4.6	1.04
08	Lecture and model in a way that enables students to learn the lesson's objective(s).	321	4.6	0.97
22	Help students learn through reading about topics in my specific content area.	321	4.6	1.15
24	Help students speak effectively about topics in my specific content area.	321	4.6	0.99
02	Create a lesson plan with a clear learning objective and rationale.	321	4.5	1.10
59	Efficiently and effectively correct and redirect students who misbehave.	321	4.5	1.16
18	Create questions that help students analyze and apply important information.	321	4.5	0.94
60	Use appropriate behavior modification techniques to shape good student behavior.	321	4.4	1.07
09	Facilitate cooperative learning activities that help students learn the lesson's objective(s).	321	4.4	0.93
20	Ask questions that enable individual students to think and learn deeply.	320	4.4	1.05
75	Teach and model self-regulatory strategies to my students.	321	4.4	1.08
46	Use strategies that are effective at involving bored students in learning.	321	4.4	1.06
74	Teach and model reflective thinking strategies to my students.	321	4.4	1.03
12	Create guided practice activities in class that reinforce student learning.	320	4.4	1.11
29	Use summative assessments to measure student learning after instruction.	320	4.4	1.19
3	Create a lesson plan that mostly uses teacher lecture and modeling.	321	4.3	1.09
23	Help students write effectively about topics in my specific content area.	321	4.3	1.22

35	Use standardized tests results to improve my teaching and student learning.	321	4.3	1.22
45	Use appropriate strategies to help students develop intrinsic motivation for learning.	321	4.3	1.07
19	Create questions that help students evaluate and synthesize important information.	320	4.1	1.03
1	Create a lesson plan that uses appropriate state learning standards.	320	4.1	1.30
28	Use formative assessments to monitor student learning during instruction.	320	4.1	1.21
48	Use strategies that help students who exhibit anxiety about learning.	320	4.1	1.19
5	Create a lesson plan that uses activities differentiated for individual student needs.	321	3.9	1.18
27	Use diagnostic assessments to determine students' learning prior to instruction.	321	3.9	1.23
73	Teach and model metacognitive (thinking about thinking) strategies to my students.	321	3.8	1.22
47	Use strategies that are effective with students who are defiant or oppositional.	320	3.8	1.16
6	Design learning tasks suitable for each student's cognitive developmental stage.	321	3.6	1.14

Principal axis factoring (PAF) with varimax rotation was used to reduce the original 75-item instrument and discover the underlying components. Ten factors (50 items) were extracted, explaining 62.3 percent of the variance. Upon careful examination for conceptual meaning we labeled the factors (1) *Lesson Design and Delivery* [10 items], (2) *Motivation and Management* [7 items], (3) *Technology Use* [5 items], (4) *Socioemotional Support* [5 items], (5) *Thinking Strategies* [4 items], (6) *Communication* [5 items] (7) *Questioning Strategies* [4 items], (8) *Standards Assessment* [3 items], (9) *Classroom Assessment* [4 items] and *Content Literacy* [3 items], respectively. Factors had good internal consistencies as indicated by Cronbach alphas ranging from 0.80 on factor 10 (*Content Literacy*) to 0.91 on factor 2 (*Motivation and Management*). Extracted factors, number of items per factor, reliabilities and loadings are provided in Table 2.

**Table 2:** Reliabilities and factor loadings based on principal axis factoring. (n = 321)

Item #	Item Description	$\alpha$	R
<i>Factor 1- Lesson Design and Delivery</i>			
		.90	
1	Create a lesson plan that uses appropriate state learning standards.		0.64
2	Create a lesson plan with a clear learning objective and rationale.		0.80
3	Create a lesson plan that mostly uses teacher lecture and modeling.		0.58
4	Create a lesson plan that mostly uses student cooperative learning activities.		0.72
5	Create a lesson plan that uses activities differentiated for individual student needs.		0.67
6	Design learning tasks suitable for each student's cognitive developmental stage.		0.63

7	Start a lesson in a way that gets students involved right away.	0.50
8	Lecture and model in a way that enables students to learn the lesson's objective(s).	0.57
9	Facilitate cooperative learning activities that help students learn the lesson's objective(s).	0.60
12	Create guided practice activities in class that reinforce student learning.	0.57
<i>Factor 2 – Motivation and Management</i>		.91
44	Use appropriate extrinsic rewards to develop student motivation for learning.	0.51
45	Use appropriate strategies to help students develop intrinsic motivation for learning.	0.63
46	Use strategies that are effective at involving bored students in learning.	0.67
47	Use strategies that are effective with students who are defiant or oppositional.	0.70
48	Use strategies that help students who exhibit anxiety about learning.	0.50
59	Efficiently and effectively correct and redirect students who misbehave.	0.68
60	Use appropriate behavior modification techniques to shape good student behavior.	0.67
<i>Factor 3 – Technology Use</i>		.89
36	Use technology to prepare materials for classroom instructional activities.	0.80
37	Use classroom technology to enhance teacher lecture and modeling.	0.85
38	Facilitate student use of technology to enhance learning activities.	0.74
39	Use technology for administrative tasks (e.g., attendance and grade book).	0.66
40	Use technology for communication tasks (e.g., email, class web page, or newsletter).	0.59
<i>Factor 4 – Socioemotional Support</i>		.89
67	Help my students cope with various personal or social issues.	0.73
68	Provide appropriate emotional support to my students.	0.85
69	Provide appropriate social support to my students.	0.74
41	Discover information about my students' personal (nonacademic) interests.	0.42
42	Use my students' interests to help develop lessons that are relevant to them.	0.40
<i>Factor 5- Standardized Assessment</i>		.81
32	Administer standardized tests using provided instructions.	0.57
33	Explain the purposes of standardized tests to students, parents, or guardians.	0.78
34	Explain the results of standardized tests to students, parents, or guardians.	0.72

35	Use standardized tests results to improve my teaching and student learning.	0.48
<i>Factor 6 – Questioning Strategies</i>		.88
17	Create questions that help students recall important facts and concepts.	0.58
18	Create questions that help students analyze and apply important information.	0.73
19	Create questions that help students evaluate and synthesize important information.	0.67
20	Ask questions that enable individual students to think and learn deeply.	0.49
<i>Factor 7 – Thinking Strategies</i>		.88
71	Teach and model general problem-solving strategies to my students.	0.47
72	Teach and model problem-solving strategies for my specific content area to my students.	0.42
73	Teach and model metacognitive (thinking about thinking) strategies to my students.	0.61
74	Teach and model reflective thinking strategies to my students.	0.65
75	Teach and model self-regulatory strategies to my students.	0.50
<i>Factor 8- Communication</i>		.86
61	Use effective oral communication with my students.	0.58
62	Use effective written communication with my students.	0.48
63	Communicate effectively with school personnel (teachers, aides, administrators).	0.68
64	Communicate effectively with the parents and guardians of students.	0.55
<i>Factor 9 – Classroom Assessment</i>		.88
27	Use diagnostic assessments to determine students' learning prior to instruction.	0.59
28	Use formative assessments to monitor student learning during instruction.	0.61
29	Use summative assessments to measure student learning after instruction.	0.68
<i>Factor 10 – Content Literacy</i>		.80
22	Help students learn through reading about topics in my specific content area.	0.64
23	Help students write effectively about topics in my specific content area.	0.71
24	Help students speak effectively about topics in my specific content area.	0.46

Note. Factor loadings < .40 are suppressed

During the first round of instrument administration, pre-service teachers appear to be most efficacious in *Technology Use* ( $M = 5.25$ ,  $SD = .76$ ) and *Communication* ( $M = 5.16$ ,  $SD = .77$ ). That is, they reported greatest degree of confidence about performing tasks involving the use of technology (use technology for communication tasks e.g., email, class web page, or newsletter), and communication tasks (communicating with students; communicating with students

and school personnel), as well as tasks involving *Socioemotional Support* ( $M = 4.90$ ,  $SD = .85$ ). This pattern remained mostly true during the second round (Table 3).

**Table 3:** Mean, standard deviation and standard error of mean of pre-service teacher self-efficacy of 10 teaching related factors.

Factors	N	T1 (pre-test)			T2 (post-test)		
		M	SD	SEM	M	SD	SEM
Technology Use	244	5.25	0.76	0.05	5.74	0.42	0.03
Communication	244	5.16	0.77	0.05	5.70	0.41	0.03
Socioemotional Support	244	4.90	0.85	0.05	5.53	0.57	0.04
Standards Assessment	244	4.70	0.98	0.06	5.31	0.69	0.04
Content Literacy	244	4.47	0.94	0.06	5.26	0.75	0.05
Thinking Strategies	244	4.44	0.85	0.05	5.36	0.60	0.04
Questioning Strategies	244	4.43	0.87	0.06	5.39	0.56	0.04
Lesson Design and Delivery	244	4.31	0.77	0.05	5.60	0.35	0.02
Motivation and Management	244	4.25	0.87	0.06	5.28	0.62	0.04
Classroom Assessment	244	4.07	1.09	0.07	5.39	0.60	0.04

On the other hand, during the first administration, pre-service teachers reported the lowest perceived efficacies on *Classroom Assessment* ( $M = 4.07$ ,  $SD = 1.09$ ), *Motivation and Management* ( $M = 4.25$ ,  $SD = .87$ ), and *Lesson Design and Delivery* ( $M = 4.31$ ,  $SD = .77$ ). These seem to suggest that they are less efficacious about their ability to perform tasks requiring differentiation, formative and diagnostic assessment, motivation, and classroom management, especially in situations of defiance or oppositional behavior. This is slightly different during the second administration when student still reported lowest efficacy in *Content Literacy* ( $M = 5.26$ ,  $SD = .75$ ) and *Motivation and Management* ( $M = 5.28$ ,  $SD = .62$ ), but also in *Standards Assessment* ( $M = 5.31$ ,  $SD = .69$ ). An ability to maintain order in the classroom is critical to student learning, yet classroom management is consistently reported as an area of low efficacy. If a teacher cannot adequately assess and respond to oppositional behavior, then instructional time can be lost. When individuals perceive that they are unable to successfully manage a situation, then are more apt to avoid that situation (Bandura, 1997). Teacher avoidance of dealing with defiant or oppositional students can result in further complication of teaching tasks.

The results of paired sample t-tests to determine if there is a difference in pre-service teachers perceived self-efficacies during week 1 and week 15 of the semester returned all statistically significant results (Table 4.). This suggests that during the course of the semester students gained increased self-efficacy over the broad range of teaching related tasks. Greatest gains were observed for *Classroom Assessment* ( $M = -1.32$ ,  $SD = 1.12$ ) and *Lesson Design and Delivery* ( $M = -1.29$ ,  $SD = .77$ ). The smallest gains were observed for *Technology Use* ( $M = -.49$ ,  $SD = .70$ ).

**Table 4:** Results of Paired-Samples T-Test for Ten Measures of Pre-service Teacher Self-Efficacy.

Paired Factors	M	SD	SEM	95 Percent CI		t	df
				LL	UL		
Classroom Assessment	-1.32	1.12	0.07	-1.46	-1.18	-18.48	243
Lesson Design and Delivery	-1.29	0.77	0.05	-1.39	-1.20	-26.18	243
Motivation and Management	-1.03	0.84	0.05	-1.14	-0.93	-19.16	243
Questioning Strategies	-0.96	0.84	0.05	-1.07	-0.86	-17.86	243
Thinking Strategies	-0.92	0.75	0.05	-1.02	-0.82	-19.05	243
Content Literacy	-0.79	0.94	0.06	-0.91	-0.67	-13.23	243
Socioemotional Support	-0.62	0.74	0.05	-0.71	-0.53	-13.12	243
Standards Assessment	-0.61	0.95	0.06	-0.73	-0.49	-10.09	243
Communication	-0.54	0.69	0.04	-0.63	-0.45	-12.26	243
Technology Use	-0.49	0.70	0.05	-0.58	-0.40	-10.94	243

Note. CI = confidence interval of the difference; LL = lower limit; UL = upper limit;  $p < .001$  for all analyses.

### Conclusion and Discussion

Several important findings emerged from this study regarding pre-service teachers' sense of self-efficacy in a variety of teaching related tasks. First, this study revealed that pre-service teachers are highly efficacious about their ability to utilize technology in a variety of ways, as well as, in their ability to communicate with parents, students and school administrators. This is interesting to note. Pre-service teachers are, not surprisingly, reporting high efficacy in the use of technology. One explanation of this perceived efficacy in their use of technology is the relatively ubiquitous nature of technology to the millennial generation (Coomes, 2004; Howe & Strauss, 2000). However, Ertmer and Ottenbreit-Leftwich (2010) cautioned that "knowing how to use technology hardware... and software ... is not enough to enable teachers to use the technology effectively in the classroom" (p. 260). Furthermore, Wozney, Venkatesh, and Abrami (2006) emphasized the need to move beyond increasing teachers' confidence in using technology to accomplish administrative and communicative tasks, to facilitate increasing confidence in their ability to use technology to achieve the learning objectives of their students. We are tempted to attribute in part, these findings to the strong emphasis on technology use at this institution coupled with the presence of smart board and multimedia capability in classrooms mean that students are vicariously learning (Bandura's Social Cognitive Theory) how technology can be integrated in the classroom, thereby increasing their confidence, and likelihood to embrace in their future practice, but we are also aware that the mere presence of technology does not necessarily translate to familiarity of its use or even to its utility.

Second, this study revealed that pre-service teachers continue to exhibit low self-efficacy in their ability to motivate students and manage the classroom effectively. This is very important to note because studies have reported an inverse relationship between teachers' reported classroom management efficacy and burnout (e.g. Ozdemir, 2007). Lastly, this study raises several questions about the "how" of pre-service teachers' self-efficacy. How is self-efficacy increased for the 10 factors described? What are the sources of self-efficacy and how can they be identified? Is there is difference in self-efficacy beliefs among pre-service teachers by gender?

### Implications for Teacher Education

We propose to pursue the remainder of the larger project by developing quantitative instruments and qualitative protocols that will enable us to better understand our students' growth and experiences. Using "personal factors," "behavior," and "environmental influences" as a structure, we anticipate developing and employing the following:

1. *Personal factors of students* – Protocols that encourage and specify processes for student reflection upon learning experiences; further development and validation of the "Pre-service Teacher Self-efficacy Scale."
2. *Behavior of students* – Checklists or rubrics that will help us systematically evaluate student achievement on the classroom learning activities and practicum teaching experiences.
3. *Environmental influences* – A system of "cataloging" the learning experiences to which students are exposed to during the classroom portion, as well as the activity expectations they are expected to meet during the practicum portion. We hope to also develop a way to capture the influences of (a) university instructors and classmates during the classroom portion and (b) cooperating teachers, students in the practicum teacher's classroom, and university supervisors during the practicum placement.

In developing and employing the above protocols, checklists, rubrics, and catalogs, we hope to analyze and deepen our understanding of the sources of pre-service teachers' emerging efficacy beliefs in accord with Bandura's (1997) four modes: enactive mastery experience, vicarious experience, verbal persuasion, and physiological and affective states. These modes focus on one's ability to judge his or her growing self-efficacy by reflecting upon successes and failures in authentic tasks, comparison to others attempting the same tasks, receiving feedback from experts, and by attending to one's somatic responses when engaging in these tasks. Because an important emphasis in teacher education is developing the ability of pre-service teachers to analyze, reflect upon, and improve their own practice, understanding how Bandura's four modes of monitoring emerging self-efficacy will be key in supporting such development. It is likely that different students may develop their senses of self-efficacy in different ways, e.g., some students may gain more information about themselves through verbal persuasion than, say, through vicarious experience. Additionally, it may be that students will use a "mix" of these modes, e.g., relying primarily on "physiological and affective states" when developing efficacy in delivering a lecture, while relying mostly on "enactive mastery" when attempting growth in use of classroom management techniques.

To begin our exploration of these sources of self-efficacy, we will develop qualitative, exploratory questions to probe our students' perceptions. For instance, to begin understanding "enactive mastery" we may ask students to describe the various activities that impacted their growth in the educational psychology course, the methods course, and the practicum experience. To better understand the role of

verbal persuasion, we will ask them to report on the impact of feedback from their two instructors, their practicum supervisor, and their cooperating teacher. We will ask them to describe how observing their preservice teacher peers, as well as their practicum cooperating teacher, served as vicarious experiences. Finally, we will ask them to describe how they have monitored their own somatic responses to employ their physiological and affective states as a source of self-efficacy understanding.

Our hope is that as we continue this process over the next few years, we will become better able to understand the interplay and mutual influence of these personal factors, student behavior, and environmental influences in order to improve one particular aspect of "environmental influence", i.e., our teaching practices, as we seek to develop higher teaching self-efficacy among our pre-service teachers.

### Broader implications

Our eventual hope is that our larger project will be successful and will result in a set of instruments, protocols, and processes that enable us to continuously assess our efforts with pre-service teaching candidates. We hope that as we continue to hone the work in our area and modify it for other areas, we will develop more generalized understanding of the development of teaching self-efficacy among pre-service teachers, and that this understanding will lead to both the generation of valid theory and practical approaches useful to the field.

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## IT'S ABOUT DISCOVERY: LEARNING TO TEACH AN INNOVATIVE STEM CURRICULUM

by

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### Abstract

*It's About Discovery (IAD) project is a partnership between two universities and eight urban and underserved rural high schools bringing students and teachers together to extend students' readiness to engage in STEM (Science Technology Engineering and Science) careers. Researchers wanted to know if the project made a difference in how rural and underserved youth think about STEM and STEM careers. Teachers reported increased comfort teaching critical thinking, 21st century skills, interdisciplinary connections and attitudes toward teaching students about a wide array of STEM careers. This data indicated that students gained understanding of specific STEM careers and increased their attitudes towards science and engineering. From these results, in the second year, the researchers encouraged teachers to implement the Ford PAS curriculum earlier, by continued support of teachers through ongoing professional development to weave Ford PAS into the other standardized material required by their school. This study was supported by the National Science Foundation under NSF Award Number DRL-0833614. February 2011.*

Recently, two reports were released describing the shifting state of STEM education in the United States and education's impact on the American economy. The National Science Board (NSB, 2012) biennially mandated *Science and Engineering Indicators* (SEI) report provides quantitative representation of America's science and engineering enterprise. The 2011 data indicates that the United States dominance has slipped dramatically, in the areas of research and development and the number of doctoral degrees obtained in the United States. China has reached the US levels in terms of the number of researchers involved in STEM enterprises. While the report demonstrates that the US is still a leader, the gap between the US and the rest of the world has significantly contracted in the last decade. The report concludes that developed countries are no longer the controlling influence of STEM but developing STEM professionals has become a "democratized" enterprise for many developed and developing countries. A product of the new STEM democracy is the development of indigenous high-technology capabilities for all people. In the second report, the Organization for Economic Cooperation and Development (OECD, 2010), *The High Cost of Low Educational Performance*, reported it is not the quality of the schooling but the quality of learning outcomes that influences economic success of a country. The authors concluded that in the US, the moderate gains in student achievement seen in international surveys such as Program for International Student Assessment (PISA) can dramatically increase the gross domestic product (Fleischman et. al., 2010).

In 2009, the National Science Foundation (NSF) granted funds for our team of educational researchers to begin the *It's about Discovery* (IAD) project. The Innovative Technology Experiences for Students and Teachers (ITEST) program funded the three-year project:

*ITEST supports the research and development of innovative models for engaging K-12 students in authentic experiences that build their capacity to participate in the science, technology, engineering, and mathematics (STEM) and information and communications technology (ICT) workforce of the future... This program provides educational opportunities for K-12 Educators. This program provides indirect funding for students at this level or focuses on*

*educational developments for this group such as curricula development, training or retention (NSF, 2012).*

The IAD project is a partnership between two universities and eight urban and underserved rural high schools in Ohio and North Carolina bringing students and teachers together to extend students' readiness to engage in STEM careers. The participating teachers engaged the students in the Ford Partnership for Advanced Studies curriculum (Ford PAS, 2012), emphasizing case study analysis, role playing, simulations, scientific experiments, research, negotiation, and collaboration to gain both knowledge and interdisciplinary skills for learning, analyzing, and decision-making in complex situations—and in the process, learn to apply classroom learning to choices in the working world.

The purposes of IAD project was to develop, implement, study and evaluate strategies that encourage students in grades 9-12 to consider and be intellectually prepared for careers in STEM fields. And, to develop strategies and provide resources so teachers will ensure that their students are prepared for the steps leading to the STEM workforce. This paper focuses on the teacher and student outcomes for the first academic year (2009-2010) of the project.

### Program Components

The IAD project capitalized on the Ford PAS modules that enabled students and teachers to draw the connections between what students learn in school and what professionals do in the workplace. Embedded in each module are opportunities for teambuilding and cooperative learning, interacting with professionals in the field and utilizing technology to communicate with industry partners, teachers and students at other partnering schools.

Teaching science as inquiry allows students to conceptualize a problem that was solved by a discovery, and then forcing them to wrestle with possible answers to the problem before they discover the answer (Waight & Abd-El-Khalick, 2011; Kang, DeChenne, & Smith, 2012). Along with science knowledge, students were exposed to the reasoning and practical skills of scientists, as well as a clear understanding of the nature of science as a distinct type of human endeavor. This is not only the way that scientists discover which properties in our surroundings depend on other properties; it also represents a powerful strategy for solving many of the problems that are encountered in the workplace, as well as in everyday life in our society (Rumala, et. al, 2011).

Properly constructed, inquiry in education motivates students for the same reasons (Waight & Abd-El-Khalick, 2011); it confronts students with an unknown puzzle that can be solved only by a process that involves risk-taking. Inquiry is in part a state of mind, and in part a skill that must be learned from experience. The state of mind is inquisitiveness, having the curiosity to ask "why" and "how" questions. The challenge is to create an educational environment that exploits the tremendous curiosity that children initially bring to school, so as to maintain their motivation for learning, not only during their school years, but throughout their lifetimes. Teachers, parents and children must be convinced of the importance of giving and encouraging supportive answers to the many "why" questions, thereby showing that we value inquisitiveness. If we stress understanding in addition to knowledge, and if we use inquiry methods that generate scientific habits of mind, students will not need to work in a research laboratory to appreciate the excitement of a life in science (Alberts, 2000; Colburn, 2004; Long, 2006).

From high-tech companies to major manufacturers to government agencies have been consistently calling for the improvement of STEM education. While the call for improvements in STEM education is valid and important, often, the technology portion of the call for more and better STEM learning is not clearly articulated by STEM advocates. When properly included, technology affords students interdisciplinary and applicable skills in practical situations, and often attracts students who are not drawn to traditional math and science content (Cavanagh & Trotter, 2008). Educators need to understand that using technology in schools is more than learning and teaching tool, but an area of interdisciplinary

studies and must play a part in preparing students for the future economy (Waight & Abd-El-Khalick, 2011). Technology should be seen as an opportunity to teach students how knowledge, tools, and skills in math and science can be applied to solve practical problems and extend human capabilities (Aikenhead et. al., 2008). When used properly, technology makes the learning of science and math a more useful endeavor for most children (Cavanagh & Trotter, 2008).

The first Secretary's Commission on Achieving Necessary Skills (SCANS, 1991) report focused on skills that students need to become productive members of the workforce. These include interpersonal skills (teamwork, working with people from diverse areas), information (acquiring and evaluating data), systems (understanding social organizations, technological systems) and use of technology. The next SCANS (1992) report addressed implications for educators: teaching should be grounded in a context; instruction should be relevant and the community should be involved in student learning. By 2012, the SCANS report addressed the need to include critical thinking as an essential skill for learning and work (Norris et. al., 2012). Ford PAS curriculum includes all of these competencies and motivates students and teachers to think about practical applications around STEM content areas.

IAD focuses on both student outcomes and teacher professional development. Research has revealed that many past professional development efforts are ineffective, especially in the relationship between sustained on-the-job professional development and increased student achievement (Harrison, 2003). Viadero (2010) suggests that "even intensive, state-of-the-art efforts to boost teachers' skills on the job may not lead to significant gains in student achievement right away" (p. 1). Often, the current processes and systems for delivering professional development are decentralized with many decisions being made in individual schools. Quite often, staff development focuses on factors that have negligible measurable impact on the classroom. Professional development should be the primary vehicle for providing and retaining quality teachers to meet high standards and to ensure that all educators have the knowledge, skills and attitudes to work with diverse student populations. However, changing teacher beliefs about education and improving instructional approaches require time and supportive contexts, and demand ownership of change (Lumpe, Czerniak, Hany, & Beltyukova, 2012).

The National Staff Development Council (NSDC, 2001) 12 standards for professional development in three areas: Context, Process, and Content ensure that professional development improves student learning and achievement. The NSDC standards served as the point of departure for the development of Context, Process, and Content in IAD: *Context standards* to understand the organization, system and culture in which the new professional development model will be implemented; *Process standards* to plan how professional development and the learning processes should be used in the acquisition of new knowledge and skills; and *Content standards*. This project developed using a teacher professional development solution using information and communication technologies (ITCs) to improve teaching practice by assisting science teachers as they prepare students to achieve across core curriculum areas and to become participants in an increasingly global, digital, and knowledge based society. IAD's professional development model offered opportunities for teachers learn the content necessary to teach the Ford PAS modules and addressed the knowledge and skills that ensure all students succeed.

The philosophy of Ford PAS professional development integrates various components that are designed to positively affect teacher instruction and student learning. Teachers experienced rich professional development that included all participating teachers, through on-line and face-to-face experiences, as well as smaller, more local teacher-directed professional development (Garet, et. al., 2001). Teachers participated in online professional development on inquiry and information technology during the academic year and as well as face-to-face workshops on specific modules during the summer. Research indicates that effective and continual

professional development is needed to provide support for the implementation of new curricula (Smylie, 1996; Spillane & Thompson, 1997).

The approaches used in this project moved away from acquisition of isolated facts, instead promoted exploration of broader concepts and development of thinking processes that can be transferred to other contexts (Donovan & Bransford, 2005). Through engagement with process-oriented investigations that are embedded in STEM-rich content, students developed the kinds of skills and dispositions that are essential components of most Americans' workplace and everyday activities (Secretary's Commission on Achieving Necessary Skills, 1991).

### Ford PAS

The purpose of the Ford PAS curriculum (<http://fordpas.org/>) is to create opportunities for students and teachers to become invested in workforce development and STEM careers. Ford PAS is an interdisciplinary curriculum providing learning experiences that challenge students academically and develop their problem-solving, critical thinking and communication skills. The curriculum links classroom learning with the challenges students will face in post-secondary education and the expectations of the adult workplace.

The curriculum consists of five modules that engage students in investigating fuel sources that can serve as alternatives to fossil fuels, while focusing on students' gaining knowledge of the key physical science concepts essential for understanding how energy is stored and used as fuel. These modules were used in various configurations in a high school science classroom. The modules are designed for the ninth grade level but may be used in any relevant high school course. Students build their skills in scientific literacy by learning how to read scientific documents and interpret data, and by keeping scientific logs and creating lab reports. Over the course of each module, project teams are assessed on their demonstration of the targeted skills.

*We All Run on Energy* module focuses on energy and its role on Earth and in human life. Students learn that energy is a complex concept, but one that is crucial to our daily lives, and is one of the central issues of the 21st century. Over the course of the module, students learn energy concepts and the essential science concepts related to energy, such as transformations and conservation of energy. At the same time, they study why scientists and governments are working to find sustainable, renewable energy sources, why fossil fuels are no longer the best solution to meeting all of our energy needs, and why they, as members of the next generation need to deal with the challenges of energy, need to understand and be engaged with the subject.

*Energy from the Sun* module presents to students the use of biomass to meet human energy needs. Students take on the role of staff members of a nongovernmental organization (NGO) consulting for a developing country that is trying to choose a biomass-fueled stove to distribute to people as well as explore ways in which biomass can help to sustainably meet its citizens' other energy needs. The NGO explores the different stove designs available and also look at the other uses of biomass for power generation, including biogas that can be used to create electricity, and ethanol, that can be used as a fuel to run engines and generators. Students studied biomass as a source of solar energy from the perspective of biology and chemistry.

*Is Hydrogen a Solution* module, students explored the possibilities of a future in which vehicles run on hydrogen-powered fuel cells. Students take on the role of employees in the research and development department of a major auto manufacturer. The CEO of the company asked their department to consider whether or not the company should invest in the development of vehicles that run on fuel cells. Student teams consider this question as they investigate the properties of hydrogen and learn how fuel cells work. Over the course of the module, students learn what hydrogen is, how it can be made available to use as a source of fuel, how it can be stored, and what obstacles currently prevent its use on a large scale. At the

end of the module, teams made their decisions and share with their classmates the reasoning behind those decisions.

*The Nuclear Revolution* module introduced students to the potential to generate power from radioactive elements found on Earth. Throughout the module, students take on the role of advisors to the prime minister of a fictional Eastern European country. Working in teams, they act as members of a governmental commission appointed to examine nuclear energy as an alternative energy source that is more sustainable than fossil fuels. Nuclear energy is seen as a potential way for the country to reduce carbon dioxide emissions and attain greater energy independence. Students investigated the potential and challenges of nuclear power and make a recommendation to the prime minister as to whether their country should build new nuclear power plants.

### Methodology

IAD adopted an experiential learning model (Hughes, 2012). Students had hands-on experiences and were able to apply their classroom learning to real-world applications, with the opportunity to use technology to discuss their findings with students at other sites. By using technology, discussions at different sites allowed students to ask questions about particular projects, critique each other's work and build on each other's questions and experiences (Lee & Hung, 2012).

Two surveys were administered to the teachers and students. Ten teachers completed a baseline survey before their summer 2009 Ford PAS professional development. One teacher was not included in the report analysis because he was not working directly with students. One teacher left the project during the spring; therefore, eight teachers completed the post-survey online by the end of the 2010 school year. Teachers administered online student surveys before they began using the Ford PAS curriculum and after it was completed. Students (N=266) completed the baseline survey by October 21, 2009. A total of 118 students completed both the pre- and post-surveys.

Observations were conducted in multiple classroom sites. These observations provided the opportunity to see the program's curriculum in action and speak to the teachers and students about their IAD experiences. Data were collected using:

- An observation protocol to document youth behavior and task engagement during class participation;
- A student group interview about their engagement with the curriculum and their learning from the activities; and
- A teacher interview that compared the observed class to a typical IAD class and discussed the effectiveness of curriculum components and features for their students.

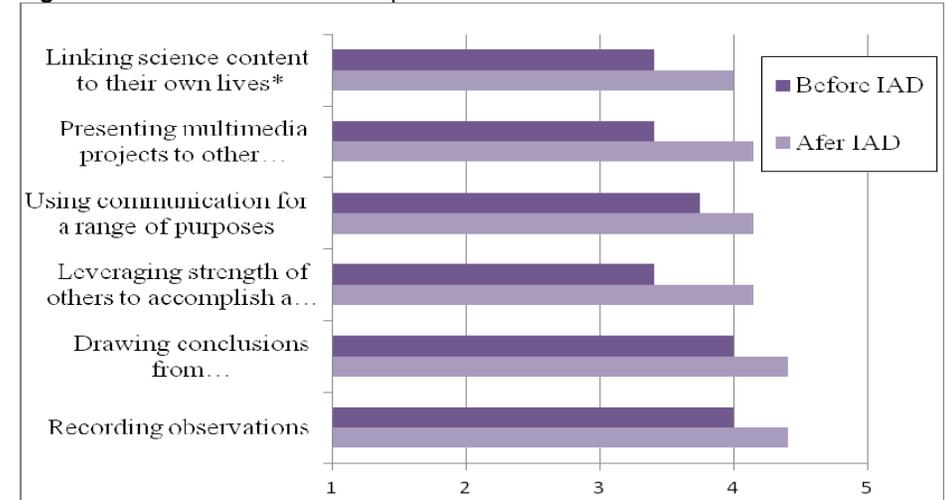
### Results

Teacher survey results indicated that IAD's impact reaches beyond their increased comfort teaching STEM skills. Teachers reported increased comfort teaching critical thinking, 21st century skills, and interdisciplinary connections. Furthermore, the most conclusive results were changes in teachers' attitudes toward teaching students about a wide array of STEM careers.

Teachers were asked to rate their comfort with teaching various STEM and 21st century skills before and after participating in IAD. Their mean comfort ratings for teaching the 21<sup>st</sup> Century skills increased after one year of participating in IAD. Specifically, after one year, teachers were significantly more comfortable teaching the following three skills to students ( $p < .05$ ):

- Presenting multimedia projects to other classrooms or schools,
- Leveraging strengths of others to accomplish a common goal, and
- Linking science content to students' lives.

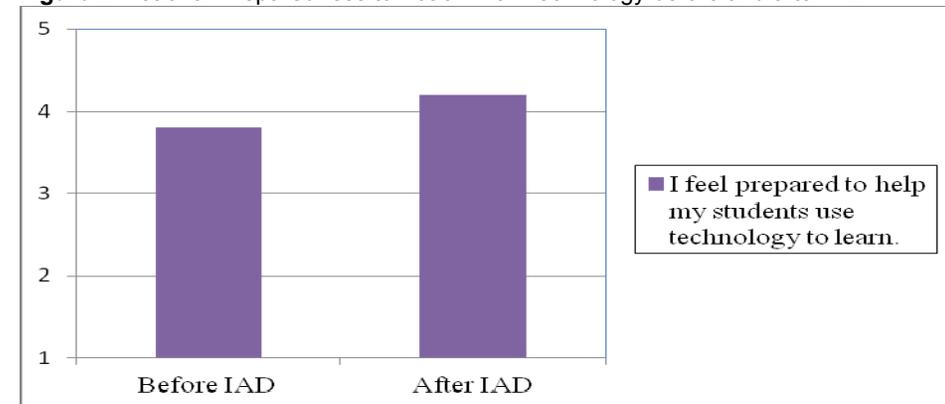
**Figure 1: Increases in Teacher Preparedness to Teach Relevant STEM**



N=7, \* $p < .05$  Note: Ratings were on a scale from 1-5, where 1="Not at all prepared" and 5="Extremely prepared."

Given the prominence of the online cross-classroom collaboration as an element within the IAD program, the significant increase in teachers' comfort with "presenting multimedia projects to other classrooms or schools" is a result of their experience with the program. While teachers initially struggled with the videoconferencing software, by the end of the first year they gained competence using the technology. "Once we (the teachers) got some practice in facilitating the activity, the students did benefit and saw the power of the technology," one teacher reported. In contrast to the positive changes in teachers' ICT skills, there was little evidence of positive change in teachers' attitudes toward the use of technology in their classroom. That is likely because many of the teachers selected for the program already valued the use of technology in the classroom. However they did attribute IAD with feeling significantly more prepared to help students use technology to learn (Figure 2).

**Figure 2: Teacher Preparedness to Teach with Technology before and after IAD**

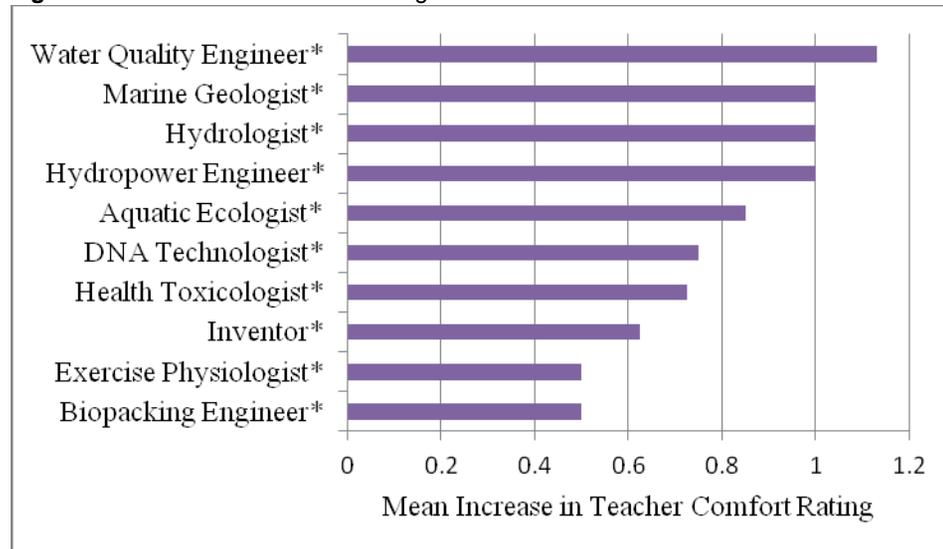


N=7,  $p < .0$  Note: Ratings were on a scale from 1-5, where 1="Strongly disagree", 3="Undecided or neutral" and 5="Strongly agree."

When asked, the teachers wanted to use the technology more in their classroom, but uniformly said that limits on classroom time constrained their ability to bring new technology in the classroom. The teachers expressed the continued challenge of technological (e.g. laptops, computer lab access, and internet reliability) availability at their schools, that they said hampered their ability to use technology when teaching the Ford PAS curriculum.

Teachers' mean comfort ratings for teaching about all 20 of the careers listed in the pre- and post-survey increased between summer of 2009 and spring 2010. After participating in IAD, teachers were *significantly* more comfortable teaching about the careers listed in Figure 3.

**Figure 3:** Increase in Comfort Teaching About STEM Careers



N=7, \*p<.05 Ratings were on a scale from 1-5, where 1="Not at all comfortable" and 5="Extremely comfortable."

One of the goals of IAD was to increase teachers' comfort with making interdisciplinary connections in their classrooms. The training and curricular modules encouraged teachers to incorporate Language Arts, Math, Economics, World Culture/History, and Government/Civics into their science teaching. As shown on the pre-test, with the exception of Math, fewer than half of participating teachers were incorporating these subjects into their science teaching in the Fall of 2009. Notably, at the end of the school year, the number of teachers making these interdisciplinary connections increased for every one of these subjects. Teachers' comfort integrating these subjects into science teaching improved across all subjects and significantly increased for Economics and World Culture/History. Table 2 presents the number of teachers who integrated each subject and their comfort doing so before and after participating in IAD for one year.

**Table 1:** Teachers' Integration of Non-STEM Subjects in the Classroom

	Integrate into Science?		Comfort Integrating into Science Teaching	
	Number of Teachers Summer 2009	Number of Teachers Spring 2010	Mean Rating: Summer 2009	Mean Rating: Spring 2010
Language Arts	4	7	3.00	3.43
Math	7	8	4.13	4.00
Economics	2	4	2.71	3.57*
World Culture/History	4	6	2.71	3.43*
Government/Civics	3	5	2.57	3.29

N=7-8, \*p<.05 Note: Ratings were on a scale from 1-5, where 1="Not at all comfortable" and 5="Extremely comfortable."

To understand the impact of IAD teacher professional development, the researchers analyzed the 2009-2010 student survey and assessment results. This data indicated that students gained some understanding of specific STEM careers and increased their interest in pursuing a STEM career. Students' attitudes towards STEM subjects remained the same over the academic year. Each teacher had to implement the program within the curriculum and schedules of their individual schools that resulted in an inconclusive desired effect of improved student attitudes. The exception was that students with more positive attitudes towards science and engineering before starting IAD rated IAD as more effective in increasing their interest in STEM careers.

In the post-survey, 76 percent of students (see Table 2) credited the Ford PAS activities with increasing their knowledge about STEM careers. About one quarter of the students responded that they learned quite a bit or a great deal about STEM careers from IAD, while another quarter said that IAD did not increase their knowledge of STEM careers. Further analysis (ANOVA) showed that this variation partially stems from classroom differences: students from certain classrooms had significantly different ratings from students in other classrooms ( $F(143) = 4.304$ ;  $p < .01$ ). Again this we attributed it to the different ways and times the program was implemented by each teacher. In part, this resulted from other curricular demands and the teachers had to fit or connect the module activities into their regular curriculum. It is possible that differences in program implementation resulted in different student outcomes.

**Table 2:** Effectiveness of IAD on Increasing Student Knowledge (N=109)

Mean (1-5)	Not At All (1)	A Little (2)	Some (3)	Quite A Bit (4)	A Great Deal (5)
2.69	24%	18%	31%	18%	8%

It appears that students gained an interest in STEM careers over the course of the academic year, from 46 percent to 56 percent. While students' STEM attitudes did not change over the course of the year, a 10 percent increase of students interested in a STEM career is a noteworthy change (Table 3).

**Table 3: Students' Desired Jobs at 30 Years Old Coded by STEM Fields**

	Percentage of Students: Fall 2009	Percentage of Students: Spring 2010
STEM	46%	56%
Health Sciences/Medicine	32%	35%
Technology	5%	7%
Science	4%	7%
Engineering	4%	6%
Mathematics	-	1%
Non-STEM	51%	42%
Other Comment	2%	1%

N=92 (Fall 2009), N=85 (Spring 2010)

Further analysis on 62 paired responses (from students who answered the question on both surveys) provides additional support for the impact of IAD on keeping students interested in STEM careers. After one year in IAD, twice as many students changed their career interest from a non-STEM to a STEM career compared to the reverse; this resulted in a 5 percent net increase of students listing a STEM career at the end of the year. Table 4 details the percentages of students who, over the course of the year, changed fields of interest and those who did not.

**Table 4: Student's Desired Career Before and After IAD**

	Pre-Survey Choice	Post-Survey Choice	Percentage of Students
Change of Field	STEM to Non-STEM	Non-STEM STEM	5%
	Non-STEM STEM	STEM Non-STEM	10%
Same Job or within same Field		STEM	42%
		Non-STEM	44%

N=62 Note: Total exceeds 100% due to rounding

In the post-survey, students reflected on how much the Ford PAS lessons and activities increased their interest in pursuing careers in STEM. Students' responses were normally distributed, with 89 percent of students crediting IAD with a positive impact on their interest in pursuing STEM careers (Table 5).

**Table 5: Students' Increased Interest in Pursuing a STEM Careers from IAD**

Mean (1-5)	Not at all	A little	Some	Quite a bit	A great deal
3.03	11%	21%	33%	27%	9%

N=112

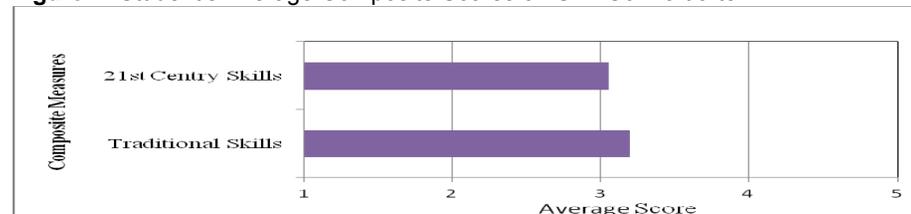
Four scales were developed to assess students' attitudes towards science, engineering, technology, and math ( $\alpha > .80$ ). Additional scales assessed students' academic self-competence in STEM and students' comfort with traditional science

skills and 21st Century skills ( $\alpha > .80$ ). Composite scores created for each scale were used in the analysis of students' STEM attitudes and perceived competence. Research has shown that an activity-based and issue-oriented curriculum such as Ford PAS, increases students' STEM attitudes in ways that positively correlate with achievement (Siegel & Ranney, 2003).

For the 2009-2010 cohort, we believe that inconsistencies and difficulties with program implementation prevented the causal process that would have led to the desired effect of improved attitudes towards STEM. Specifically, the timing and the extent to that the curriculum was used in the classroom, the challenging reading level of the student materials, and difficulties related to using technology resources all contributed to the very mixed student outcomes from year one of this study. Science and technology attitude scores remained slightly positive throughout the year of IAD, while engineering attitude scores remained neutral. Students' science competence slightly decreased throughout the course of the year, staying within a neutral rating. Students' end of year attitudes towards technology were the highest compared to other subjects.

Considering the standard deviation of the students' composite scores, a sample size of 255 would have been needed in both samples to detect significant change. With increased recruitment for the evaluation and the addition of new teachers, the sample size in the second year may reach closer to this number. Students remained somewhat comfortable with both traditional science skills and the 21<sup>st</sup> Century Skills that were needed for the IAD curriculum. Students' average comfort score regarding these types of skills. Teachers reported that some students found the 21<sup>st</sup> Century Skills challenging; therefore the consistency in score supports their growth in these skills.

**Figure 4: Student's Average Composite Scores on Skill Comfort after IAD**



Note: Ratings were on a scale from 1-5, where 1="Not at all comfortable" and 5="Extremely Comfortable."

The students appreciated the Ford PAS modules, especially when they were able to engage in hands-on activities, active learning, and opportunities to solve problems in groups (Table 6).

**Table 6: Students' Reasons for Enjoying Their Favorite Ford PAS Module (N=87)**

Reason	Percentage of Students
Hands-on	26%
Interesting/relevant topic	22%
Exploratory learning	20%
It was the only activity we did.	18%
It was fun.	15%
Collaboration/presentation	9%
Other	1%

Note: Total exceeds 100%, as some responses were coded in multiple categories.

When asked to specify what activities the students enjoyed, they described: manipulating the materials; caring for the radiation-exposed plants; burning the biomass; and building objects like windmills and water wheels. When asked which IAD activity they liked best, one-fifth of students responded by explaining how these hands-on activities helped them learn scientific concepts. One student's favorite IAD activity was building a stove "because it was very interesting to be able to see the fuel burn. We also got to see flame coloring to determine how hot it is burning."

### Conclusions and Directions for Future Research

While it is often assumed a central goal for education is to prepare students for the future and yet very little is done to prepare teachers to educate students about careers when they leave their K-12 experiences. A primary purpose of the IAD project was to offer professional development for the participating teachers about processes to educate students about STEM or STEM related careers through an inquiry-based approach to teaching. The researchers found that teachers increased their comfort level teaching about specific science careers, scientific critical thinking, and making interdisciplinary connections in the science classroom. The teachers expressed being more prepared to teach both traditional STEM skills and 21<sup>st</sup> Century skills using information and communication technology (ICT). While initially struggling with project's technology, the teachers eventually became skilled users and more importantly understood the potential for using this type of technology for teaching students. The students found many of the activities in the Ford PAS modules labs interesting and engaging, particularly the hands-on, group work, and exploratory learning opportunities. It was commonly heard that the students enjoyed the opportunities to do real engineering and science experiments that translated to a positive attitude toward STEM careers. The researchers found that the students' knowledge of and interest in pursuing STEM careers increased over the year.

The researchers believe when analyzing the second year data, they will see greater gains in teacher comfort level teaching the Ford PAS curriculum as well as students having a better understanding of the curriculum and what it means by a STEM career. The rationale is that the curriculum will be introduced earlier and will better intertwine with curriculum material required by their school. The IAD team became aware of the deficits found in the first year implementation and continued to provide additional support to implement the collaboration between classrooms. The team changed the social media technology to better insure that software was not the focus of the learning but seen as a tool to communicate with other classrooms. The team provided professional development prior to the second year of the project in order to insure that the teachers were comfortable using the new technology. In the second year, professional development shifted from being a traditional delivery of knowledge to intertwining the content knowledge with interacting with experts in the career fields discussed in the curriculum (scientists, engineers, career specialists, and creative users of energy).

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**Review of**  
**100 QUESTIONS AND ANSWERS ABOUT YOUR CHILD'S**  
**OBSESSIVE COMPULSIVE DISORDER**  
**BY COBERT, JOSIANE (2010).**  
**SUDBURY, MA: JONES AND BARTLETT PUBLISHERS. 144 PP.**

**Reviewed by**  
**Thomas Hansen**

THOMAS HANSEN is an educational consultant.

This is a very basic and clear text that outlines the main points of obsessive compulsive disorder for the reader. There are six sections, each with a number of very specific questions that are answered by the author. Part I deals with the basics of obsessive compulsive disorder (OCD) and part II handles the way the diagnosis is typically take care of. There follow here then three chapters on the treatment of OCD: general concepts; non-drug therapy through cognitive-behaviorial approaches; and treatment through the use of medications.

That leaves Part VI: The Family, Schools, and Siblings. This is the most important book sections for educators because it draws together these three important elements of the child's life. Questions here are essential for the parents to consider. One question is, "Should I tell my daughter's school that she has OCD?" Another good question answered here is, "Should I try to get the rest of my family to help in the treatment of my child?"

I recommend this book for several different reader groups and for many different uses. First, teacher educators need to get a quick update on the most recent theories and treatments involved. Knowing how to find good basic resources for teachers is essential for us. Second, teachers need to have a working knowledge of what is presented in this book. This is a great place to go for quick answers. Third, parents need to get access to this series of books, including this one, to have a safe place to look into the complicated world of obsessive compulsive disorder. This book provides that place and in a very clear fashion.

This is a good resource book for all educators' professional libraries and important reading for administrators. This text would work well in a topics course or basic education course for teacher and candidates and future administrators also. Another good use would be for professional development sessions. It could be required reading for workshops, with smaller groups taking on one of the sections of the book to discuss.

I highly recommend this book. It is part of a very helpful series of dozens of such title. The text includes a good glossary with clear definitions of important terms for parents to know. The book takes a short time to read, is great for discussions, and includes an appendix with other helpful information, such as organizations and web sites to explore for further knowledge and assistance.

The series includes many other topics related to the health, learning, and other areas of a child's life. Other books from Jones and Bartlett Publishers about children include such topics as questions and answers on diabetes, ADHD, and cancer. The series includes other health and well-being topics, including many for adults. Each book is written by a specialist in the given area.