The Texas Forum of Teacher Education, a publication of the Texas Association of Teacher Educators (TxATE), is a refereed journal published once annually. Articles in the journal are directed to both campus-based and field-based Texas teacher educators. TxATE members, including graduate students, are encouraged to submit manuscripts.

Authors must be active members as a condition for publication.

Views expressed in the articles are not necessarily those of the Texas Association of Teacher Educators.
# The Texas Forum of Teacher Education

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EDITOR’S INTRODUCTION

In my mind, the 2013 issue of Texas Forum for Teacher Education includes manuscripts related to two major ideas: improving practice and addressing issues of diversity. The authors address areas of practice in our educator preparation programs to facilitate reflection to the evaluations our candidates make on our faculty members and instrument related to field commitment. Other authors have researched integration of technology into educator preparation programs and how to attract more STEM students along with more overarching ideas of diversity related to bilingual issues and awareness of diversity. Together these articles are an impressive slice of scholarship in Texas. All the articles were helpful and informative to me as a continuing teacher educator in Texas. The environment of teacher education is changing nationally and here in our state. I believe these articles show that teacher educators in Texas are not only aware of the issues facing our field, but are also already working to provide innovations and pathways to better teacher preparation. It was truly an honor to work with these authors and their ideas.

Looking forward, the 2014 Call for Papers is included at the end of the journal. Dr. Robert Maninger will be serving as the managing editor and will work with his team to review and edit next year’s journal.

I would also take this time to thank my Associate Editor, Dr. Robert Maninger and my Assistant Editor, Dr. Debra Shulsky. I enjoyed working with you immensely. If you have any comments about the journal, you may contact me via email at rudolpham@sfasu.edu.

Amanda M. Rudolph
Managing Editor 2013
THE TEXAS FORUM OF TEACHER EDUCATION
INTRODUCTION

Educators recognize the importance and the value of content knowledge, instructional strategies, and interpersonal skills. Professors facilitate learning and also serve as mentors, academic advisors and role models. The professor’s qualities may have a lifelong impact on students. This paper describes students’ perceptions of the relative ranking of qualities of an ideal teacher. Additionally, it contributes to the literature and the debates about teacher qualities, teaching assessment and the concept of effective teachers.

Teacher Qualities

Developing an educational environment that is conducive to student learning is a continual challenge in the field of higher education. One essential component of addressing this challenge has been the role of the instructor in the classroom. The majority of research about the teacher’s role in the classroom has been limited primarily to observable behaviors and various pedagogies employed by the instructor. There has been little research (Kegel-Flom, 1983; Silva, Silva, Quinn, Draper, Cover, & Muoff, 2008) that investigates the impact of an instructor's personality on the quality of instruction. Kneipp, Kelly, Biscoe, & Richard’s (2010) study indicated that of the five personality characteristics assessed (openness, conscientiousness, extroversion, agreeableness, and neuroticism), agreeableness was
the only factor that significantly correlated with student ratings of instructional quality. Kneipp, Kelly, Biscoe, & Richard (2010) also pointed out that faculty need to be mindful that their personality traits impact the interactions with students resulting not only in more meaningful learning, but also in retention and graduation rates.

In some cases, students may be viewed as consumers. McMillan & Cheney (1996) discussed the model of “student as consumer,” (p. 2) which provides the introduction of marketing strategies into higher education. The model is intended to replace the student-as-passive-receptacle, introducing greater responsiveness of educators to student feedback. However, the model has sometimes been overused by universities and has caused many problems. For example, students demand entertainment rather than knowledge, they feel entitled to high grades while exerting little effort, they concentrate on the diploma or eventual employment rather than the process of learning, and they become excessively individualistic and selfish (Cote & Allahar, 2007; McMillan & Cheney, 1996).

Researchers have noted that dissatisfied students often cite the amount of tuition they pay and complain that they are not getting their money’s worth for a particular course (Cote & Allahar, 2007; Newson, 2004). Lindahl & Unger (2010) argue that cruelty in teacher evaluations caused by the overuse of the “student-as-consumer” (p. 73) model reflects the process of de-individuation which indicates disconnecting with the teacher as a human being and showing less respect to the teachers. Because of the negative effects resulting from the consumerism model, McMillan & Cheney (1996) suggest replacing the current consumerism model with one of “critical engagement,” where students both respect the faculty and retain their right to “critique and shape” (p. 15) their education. Regardless, both models acknowledge the value of the student’s perspective.

What professors do, how they behave, and how they respond to students may be as significant as what they discuss in the classroom. Educators must not only pay attention to the content of their courses but must also consider how the image that they present influences those around them (Scott, O’Neal, &
Cheatham, 1994). This research contributes to the literature by ranking faculty qualities most valued by students. These qualities of professors may contribute to students’ life experiences, character formation, and academic success.

**Teaching Assessment**

Good teachers continually strive to improve their instruction. In order to improve, good teachers reflect on their teaching. They consider their teaching methods, the activities during the class, the diversity of their students, and many other aspects that impact the day’s lesson. Often, post-secondary faculty receive a formal assessment of their teaching based on the results of the student evaluation. Simon & Soliman (2003) state that teacher effectiveness can be evaluated through (i) direct assessment of knowledge and skills acquired by the students or (ii) a questionnaire designed to survey students’ opinions about the teaching styles and behaviors of teachers. Student ratings of instruction (SROIs) or student evaluations of teaching (SETs) belong to the second kind of assessment and serve as a channel for students to communicate whether the teacher is successfully meeting student expectations of quality instruction (Wallace & Wallace, 1998). These measures are not always consistent with each other. For example, Simpson & Siguaw (2000) report of a finance instructor who raised student scores on a national exam from the 13th to 97th percentile, yet the instructor’s SETs consistently resided in the lowest third of all instructor SETs.

The formal student evaluation of faculty teaching allows students the opportunity to anonymously critique the performance of their instructors. Student evaluation formats vary from university to university. Some universities require all faculty to be evaluated; some require only non-tenured faculty to be evaluated. Some faculty evaluation forms are very long; some have only a few questions. Some faculty evaluation forms are completed with paper and pencil; some are online. Regardless of the format, the results are the same: students critique the teaching ability of their college professors. Many faculty receive the student evaluation results with trepidation. Ensuring student anonymity encourages ruthless
critiques and comments from some students. Yet, as a faculty member, one should accept the student evaluations and strive to make improvements based on their feedback and comments.

Much of the research and debate centers on the validity and biases of student ratings. Though some studies tend to conclude that these evaluations are reliable and valid when compared to other measures of effective teaching (Abrami, Levantha, & Raymond, 1982; Ambady & Rosenthal, 1993; Centra, 2003), there are also studies indicating that ratings are biased by such factors as workload (Marsh & Roche, 2000), student effort (Centra, 2003), and grading leniency (Newson, 2004). Student ratings have also been found to be related to students’ sense of involvement in the course (Remedios & Lieberman, 2008).

There is also some evidence that the relationships of students’ background characteristics and academic discipline differences may affect their teaching evaluations (Cranton & Smith, 1990; Muir & Leslie, 1990). Professors of humanities courses are frequently rated more highly than professors of social science and natural science courses (Marsh & Dunkin, 1992). Beran & Violato (2005) also show that lab-type courses receive higher ratings than lectures or tutorials, and courses in the social sciences receive higher ratings than courses in the natural sciences.

Despite the debate about the validity and biases of students’ evaluations, researchers (Heller & Clay, 1993) claim that students’ evaluations are more highly reliable than other measures of teacher effectiveness, including peer ratings and observations, and thus students’ evaluations of faculty continue to be the most frequently used gauge in higher education of how well courses are taught.

While SETs are commonly used to evaluate teachers, this study complements the information that may be gleaned from SETs. It provides a sharper focus on teacher qualities that students value providing unique insights regarding teaching assessment. First, the research is not designed as a teaching evaluation of specific courses, therefore, the results are unaffected by the possible biases such as students’ expected grades, the course workloads, and the difficulty of the course. Second, the research is not confined to the
evaluation of individual instructors; therefore, the study has broader application in assessing teacher qualities that are important from students’ perspectives. Third, based on the literature about disciplinary evaluation differences, the study compares the perceptions of Teacher Education students with that of Economics students.

**Effective Teaching**

For many years researchers studying teacher effectiveness have recommended that selection criteria for university Teacher Education programs include some type of assessment of affective or personality traits, such as dispositions (Heller & Clay, 1993; McCutcheon, Schmidt, & Bolden, 1991; Muir & Leslie, 1990).

Chism (1999) pointed out factors such as subject matter competence, preparation and organization, clarity, enthusiasm, and interpersonal rapport are crucial for effective teaching. Similarly, Onwuegbuzie, Witcher, Collins, Filer, Wiedmaier, & Moore (2007) suggest that students believe that effective college teaching encompasses the following nine characteristics, listed in order of importance: (1) student-centered; (2) knowledgeable about the subject matter; (3) professional; (4) enthusiastic about teaching; (5) effective at communication; (6) accessible; (7) competent at instruction; (8) fair and respectful; and (9) provider of adequate performance feedback. Likewise, Hamacheck (1985) found that the best teachers possessed a warm and friendly attitude and had firm, yet reasonable expectations.

Allan, Clarke, & Jopling (2009) define effective teaching in terms of strategies to promote learning, a set of teacher characteristics, and creating a positive learning environment. Their research shows that “To demonstrate excellent knowledge of their subject,” is the most highly regarded factor. “Respect students’ opinions” and “are enthusiastic about learning” (p. 368) are also highly regarded by students. Interestingly, their research also shows that students favor actions, teaching strategies, and personal attributes of teachers that lead directly to the enhancement of their own learning. Likewise, Kindred & Mohammed’s (2005) research reveals that instructor competence is a major concern of
students. Other researchers have found that effective teachers possess certain “habits of thinking and action about teaching … and the role of the teacher” (Darling-Hammond & Baratz-Snowden, 2005, p. 121; Onwuegbuzie et al, 2007, p. 116). Characteristics described in the literature include communicating respect and caring in a professional manner (Peart & Campbell, 1999). Clayson & Sheffet (2006) also found that the students’ ratings of their perceptions of the instructor’s personality at the beginning of the term were associated with the end-of-course SET scores.

Since teachers’ content competence and their personal traits are both important, Lowman (1994) argued for a two-factor model of teaching effectiveness: intellectual excitement and interpersonal rapport. As pointed out by Kirchner, Evan, & Norman (2010), combining a dispositional-type instrument with performance-based measures holds the promise of measuring teacher effectiveness. In practice, the National Council for Accreditation of Teacher Education defines the task for teacher education programs to produce “competent, caring, and qualified teachers,” who possess the necessary knowledge, skills and dispositions to “help all students learn” (National Council for Accreditation of Teacher Education, 2008, p. 1). The Council of Chief State School Officers (2011) addressed the need for teachers to not only master content and pedagogy but also possess personal dispositions that will lead to effective teaching in the classroom and student success.

Effective teaching literature emphasizes both the competence and the personal traits of educators. However, teaching effectiveness is often based primarily on SETs. This research contributes to the literature by (i) providing an instrument to evaluate teacher qualities and (ii) by ranking these qualities from the student’s perspective.
STUDY PURPOSE

The purpose of this study is to determine qualities of university faculty that post-secondary Teacher Education and Economics students report as being important. The research questions are:

- What are students’ rankings (relative importance) of university faculty qualities?
- Do Teacher Education students’ ratings of faculty qualities differ from those of Economics students?
- Do ratings of faculty qualities differ based upon student characteristics?

Answers to these questions will inform university faculty about the expectations of students. Furthermore, this study will identify how diverse students may differ in their evaluations of faculty. Given that some higher education institutions use a common set of questions for student evaluations of all faculty, this study may demonstrate the challenges of comparing faculty evaluations across academic disciplines.

METHODS

Setting

This study was conducted at a private, urban university in the Southwest US in 2011-2012. The university offers undergraduate and graduate degrees, including Ph.D. and professional degrees. The institution has a total enrollment of about 7500 students, and it is designated as a Hispanic Service Institution (HSI) due to the large percentage of Latino/a students.

Study Design

This study entailed a cross-sectional survey of Teacher Education and Economics students. An instrument was crafted to assess the importance students assign to the qualities that faculty possess/demonstrate. Students who were asked to complete the instrument were attending campus-based Teacher Education or Economics classes. The two academic disciplines were selected to see if Teacher
Education students who are taught the qualities of effective teachers would demonstrate a different standard of expectations of university faculty than students in another academic discipline. Students completed the hardcopy survey instruments in class. Prior to conducting the survey, Institutional Review Board approval was received.

**Sample**

A total of 338 students in Teacher Education and Economics disciplines comprised the sample. As noted in Table 1, students were represented by all classifications (freshman, sophomore, junior, senior, graduate). Roughly half of the students had a parent who had graduated from college. Females comprised 56% of the participants, and 56% of the participants were Economics students.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Sample Characteristics for 338 Students *, N (%) or Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Age, Yrs</td>
<td>23.21 ± 6.40</td>
</tr>
<tr>
<td>Student GPA</td>
<td>3.44 ± 0.38</td>
</tr>
<tr>
<td>Freshman</td>
<td>53 (16)</td>
</tr>
<tr>
<td>Sophomore</td>
<td>65 (19)</td>
</tr>
<tr>
<td>Junior</td>
<td>52 (16)</td>
</tr>
<tr>
<td>Senior</td>
<td>91 (27)</td>
</tr>
<tr>
<td>Graduate</td>
<td>74 (22)</td>
</tr>
<tr>
<td>Female</td>
<td>187 (56)</td>
</tr>
<tr>
<td>Male</td>
<td>150 (45)</td>
</tr>
<tr>
<td>Parent Graduated College, Yes</td>
<td>165 (49)</td>
</tr>
<tr>
<td>Parent Graduated College, No</td>
<td>170 (51)</td>
</tr>
<tr>
<td>Teacher Education Student</td>
<td>149 (44)</td>
</tr>
<tr>
<td>Economics Student</td>
<td>189 (56)</td>
</tr>
</tbody>
</table>

*There are missing data elements for about 1% of the student sample.

**Statistical Analyses**

The data were analyzed using IBM SPSS 19.0. Descriptive statistics including N’s, percents, means and standard deviations were derived. To compare item responses from Teacher Education and
Economics students, independent samples t-tests were conducted with a Bonferroni adjustment to control for Type I error inflation. Independent samples t-tests were also used to compare responses based upon student classification (undergraduate vs graduate), sex (male vs female) and level of parent’s education (college graduate vs not college graduate). Pearson and point-biserial correlation coefficients were calculated for bivariate analyses. Unless noted otherwise, the a priori level of significance was .05.

Instrument Validity/Reliability

A survey instrument assessing 22 faculty qualities (see Table 2) was developed. Each of the 22 items was scored on a scale of 1 to 5 corresponding to “not important at all,” “not very important,” “neutral,” “important,” and “very important.” Following initial development of the survey instrument, it was reviewed by peer faculty for content validity, and the instrument was pilot tested with a group of students. The instrument was subsequently revised based upon feedback.

Table 2
Teacher Qualities

<table>
<thead>
<tr>
<th>The teacher:</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Is knowledgeable about the subject.</td>
<td></td>
</tr>
<tr>
<td>2. Conveys knowledge effectively.</td>
<td></td>
</tr>
<tr>
<td>3. Is punctual</td>
<td></td>
</tr>
<tr>
<td>4. Demonstrates confidence when teaching.</td>
<td></td>
</tr>
<tr>
<td>5. Is patient with students.</td>
<td></td>
</tr>
<tr>
<td>6. Demonstrates a caring attitude for students.</td>
<td></td>
</tr>
<tr>
<td>7. Listens to students’ concerns.</td>
<td></td>
</tr>
<tr>
<td>8. Is dedicated to excellence in teaching</td>
<td></td>
</tr>
<tr>
<td>9. Is sensitive to diversity</td>
<td></td>
</tr>
<tr>
<td>10. Offers adequate resources for students to complete tasks.</td>
<td></td>
</tr>
<tr>
<td>11. Is willing to help students achieve goals.</td>
<td></td>
</tr>
<tr>
<td>12. Encourages students to achieve.</td>
<td></td>
</tr>
<tr>
<td>13. Shows passion for life.</td>
<td></td>
</tr>
<tr>
<td>14. Makes the classroom fun.</td>
<td></td>
</tr>
<tr>
<td>15. Relates classroom work with life examples.</td>
<td></td>
</tr>
<tr>
<td>16. Uses new technology to teach.</td>
<td></td>
</tr>
<tr>
<td>17. Presents materials in an organized way.</td>
<td></td>
</tr>
<tr>
<td>18. Grades fairly.</td>
<td></td>
</tr>
<tr>
<td>19. Sets attainable expectations for the students</td>
<td></td>
</tr>
<tr>
<td>20. Is dedicated to the Mission of the university. (Promotes life-long learning and fosters the development of the whole person)</td>
<td></td>
</tr>
<tr>
<td>21. Engages students in the classroom.</td>
<td></td>
</tr>
<tr>
<td>22. Is intellectually stimulating.</td>
<td></td>
</tr>
</tbody>
</table>
To assess reliability of the revised instrument, a preliminary sample of responses from 61 students was collected. Cronbach’s alpha for the 22-item instrument was .866, indicating appropriate internal consistency (George & Mallery, 2003).

To assess the validity of the instrument, an exploratory factor analysis (Principal Components Analysis) was conducted with the response data from 61 students. Preliminary tests demonstrated suitability for factor analysis (Bartlett, 1954; Kaiser, 1974). Based upon the scree test (Catell, 1966), the model was evaluated for two components using Varimax rotation. (Tabachnick & Fidell, 2007). With a cutoff of .3 for inclusion of items, all items loaded to the components. Two items (Items 4 and 10) were complex, loading to both components. The two-component solution explained 39.0% of the variance, with component 1 explaining 28.3% and component 2 explaining 10.6%. Many items loaded strongly to the two components. Based upon the preliminary findings, the revised instrument revealed a two-factor structure with acceptable internal consistency reliability and validity.

RESULTS

The rankings of teacher qualities, ordered from most important to least important, are presented in Table 3. Highly rated qualities of faculty include those who are knowledgeable, convey knowledge and grade fairly. Some of the lowest rated faculty qualities include those who make class fun, are sensitive to diversity, have a passion for life and use new technology.
Table 3
Rating of Faculty Qualities, Rank Ordered by Means

<table>
<thead>
<tr>
<th>Quality</th>
<th>Mean ± SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1. Knowledgeable</td>
<td>4.86 ± .395</td>
</tr>
<tr>
<td>Q18. Grades Fairly</td>
<td>4.80 ± .446</td>
</tr>
<tr>
<td>Q2. Conveys Knowledge</td>
<td>4.80 ± .428</td>
</tr>
<tr>
<td>Q11. Willing To Help</td>
<td>4.71 ± .511</td>
</tr>
<tr>
<td>Q12. Encourages Students</td>
<td>4.71 ± .567</td>
</tr>
<tr>
<td>Q4. Confident</td>
<td>4.67 ± .513</td>
</tr>
<tr>
<td>Q8. Dedicated To Excellence</td>
<td>4.65 ± .634</td>
</tr>
<tr>
<td>Q17. Organized</td>
<td>4.62 ± .571</td>
</tr>
<tr>
<td>Q19. Sets Attainable Goals</td>
<td>4.62 ± .559</td>
</tr>
<tr>
<td>Q5. Patient</td>
<td>4.56 ± .667</td>
</tr>
<tr>
<td>Q10. Offers Resources</td>
<td>4.55 ± .616</td>
</tr>
<tr>
<td>Q7. Listens</td>
<td>4.51 ± .670</td>
</tr>
<tr>
<td>Q6. Caring</td>
<td>4.51 ± .712</td>
</tr>
<tr>
<td>Q22. Intellectually Stimulating</td>
<td>4.49 ± .701</td>
</tr>
<tr>
<td>Q21. Engaging</td>
<td>4.44 ± .756</td>
</tr>
<tr>
<td>Q15. Uses Real Life Examples</td>
<td>4.40 ± .803</td>
</tr>
<tr>
<td>Q3. Punctual</td>
<td>4.36 ± .759</td>
</tr>
<tr>
<td>Q14. Makes Class Fun</td>
<td>4.33 ± .813</td>
</tr>
<tr>
<td>Q9. Sensitive To Diversity</td>
<td>4.32 ± .959</td>
</tr>
<tr>
<td>Q20. Dedicated To Mission</td>
<td>4.21 ± .954</td>
</tr>
<tr>
<td>Q13. Passion For Life</td>
<td>4.17 ± .929</td>
</tr>
<tr>
<td>Q16. Uses New Technology</td>
<td>3.81 ± .979</td>
</tr>
</tbody>
</table>

Table 4 provides a comparison of Teacher Education and Economics student ratings. For the most highly rated faculty qualities (knowledgeable, grade fairly and convey knowledge), ratings did not differ between Teacher Education and Economics students. However, the two groups differed significantly on 15 of the 22 of the questions, with Cohen’s d effect sizes ranging from .33 to .65. On each of the 15 faculty qualities for whom Teacher Education and Economics students’ ratings differed, the Teacher Education students had a significantly higher mean score. In other words, for over two-thirds of the faculty qualities analyzed, Teacher Education students placed a significantly higher value on these
qualities. There were no faculty qualities on which Economics students placed a significantly higher value.

Table 4
Rating of Faculty Qualities by Student Academic Discipline (Mean ± SD)

<table>
<thead>
<tr>
<th>Quality</th>
<th>Teacher Ed</th>
<th>Economics</th>
<th>p-value</th>
<th>d*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1. Knowledgeable</td>
<td>4.89 ± .332</td>
<td>4.84 ± .437</td>
<td>.177</td>
<td>.13</td>
</tr>
<tr>
<td>Q2. Conveys Knowledge</td>
<td>4.85 ± .381</td>
<td>4.77 ± .460</td>
<td>.087</td>
<td>.19</td>
</tr>
<tr>
<td>Q3. Punctual</td>
<td>4.58 ± .627</td>
<td>4.19 ± .807</td>
<td>&lt;.001b</td>
<td>.53</td>
</tr>
<tr>
<td>Q4. Confident</td>
<td>4.78 ± .417</td>
<td>4.59 ± .564</td>
<td>&lt;.001b</td>
<td>.38</td>
</tr>
<tr>
<td>Q5. Patient</td>
<td>4.74 ± .513</td>
<td>4.41 ± .736</td>
<td>&lt;.001b</td>
<td>.51</td>
</tr>
<tr>
<td>Q6. Caring</td>
<td>4.70 ± .566</td>
<td>4.35 ± .776</td>
<td>&lt;.001b</td>
<td>.51</td>
</tr>
<tr>
<td>Q7. Listens</td>
<td>4.64 ± .597</td>
<td>4.41 ± .706</td>
<td>.002b</td>
<td>.35</td>
</tr>
<tr>
<td>Q8. Dedicated To Excellence</td>
<td>4.81 ± .443</td>
<td>4.52 ± .727</td>
<td>&lt;.001b</td>
<td>.47</td>
</tr>
<tr>
<td>Q9. Sensitive To Diversity</td>
<td>4.61 ± .718</td>
<td>4.10 ± 1.060</td>
<td>&lt;.001b</td>
<td>.55</td>
</tr>
<tr>
<td>Q10. Offers Resources</td>
<td>4.66 ± .530</td>
<td>4.47 ± .665</td>
<td>.003</td>
<td>.31</td>
</tr>
<tr>
<td>Q11. Willing To Help</td>
<td>4.78 ± .430</td>
<td>4.65 ± .560</td>
<td>.015</td>
<td>.26</td>
</tr>
<tr>
<td>Q12. Encourages Students</td>
<td>4.85 ± .428</td>
<td>4.59 ± .634</td>
<td>&lt;.001b</td>
<td>.47</td>
</tr>
<tr>
<td>Q13. Passion For Life</td>
<td>4.46 ± .731</td>
<td>3.93 ± 1.000</td>
<td>&lt;.001b</td>
<td>.60</td>
</tr>
<tr>
<td>Q15. Uses Real Life Examples</td>
<td>4.53 ± .683</td>
<td>4.30 ± .873</td>
<td>.006</td>
<td>.29</td>
</tr>
<tr>
<td>Q17. Organized</td>
<td>4.68 ± .510</td>
<td>4.57 ± .612</td>
<td>.068</td>
<td>.19</td>
</tr>
<tr>
<td>Q18. Grades Fairly</td>
<td>4.80 ± .450</td>
<td>4.81 ± .444</td>
<td>.825</td>
<td>.02</td>
</tr>
<tr>
<td>Q19. Sets Attainable Goals</td>
<td>4.72 ± .477</td>
<td>4.54 ± .605</td>
<td>.002b</td>
<td>.33</td>
</tr>
<tr>
<td>Q20. Dedicated To Mission</td>
<td>4.54 ± .731</td>
<td>3.96 ± 1.031</td>
<td>&lt;.001b</td>
<td>.64</td>
</tr>
<tr>
<td>Q21. Engaging</td>
<td>4.70 ± .529</td>
<td>4.23 ± .840</td>
<td>&lt;.001b</td>
<td>.65</td>
</tr>
<tr>
<td>Q22. Intellectually Stimulating</td>
<td>4.63 ± .611</td>
<td>4.39 ± .750</td>
<td>.002b</td>
<td>.35</td>
</tr>
</tbody>
</table>

a Cohen’s d standardized effect size
b Statistically significant, t test with unequal variances, Bonferroni adjustment (α = .05/22)

Comparing males to females, the two groups differed significantly on three questions. Females placed higher importance than males on “conveys knowledge,” “patient,” and “sensitive to diversity.” Analysis based upon the education level of the students’ parents indicated no significant differences on any of the 22 questions.

Student age and classification (undergraduate vs graduate) correlated significantly with ratings on only one of the 22 teacher qualities (makes class fun), r = -.203, p < .001 and rpb = .166, p = .002, respectively. As students grow older and progress further in their education, they place less importance on faculty making class fun. Furthermore, the correlation of student GPA with this faculty quality (makes
class fun) was $r = -.173$, $p = .002$. The lower the student’s GPA, the higher their rating of importance that faculty make class fun.

**DISCUSSION**

Students who participated in this study reported that they value faculty who are knowledgeable, who convey knowledge and who grade fairly. These are qualities that every faculty should strive to attain. Professors are hired because they are experts in their field, so it is not surprising that students expect their teachers to be knowledgeable. Students also value faculty who can convey knowledge. However, there is a difference between being knowledgeable and being able to convey knowledge. Many of us have taken a class where the professor was very knowledgeable but was unable to bring the information down to the level of the students. Many times post-secondary faculty have no training in pedagogy and may not be aware of instructional strategies that increase student learning. Finally, it is difficult to argue against the importance of grading fairly. Student grades are based on faculty grading. Many students receive and maintain scholarships based on their GPAs so, of course, students will want faculty to grade fairly.

An interesting finding in this study was that the Teacher Education students had higher expectations of teacher qualities than the Economics students in over 2/3 of the qualities analyzed. Teacher education students are students who are planning to become teachers upon graduation. The Teacher Education students surveyed in this study were enrolled in their professional development coursework which has an emphasis on pedagogy. This coursework is intended to prepare them to become successful teachers. An important requirement of this coursework includes a field experience which places the students in a school to observe successful instructional practices. Teacher Education students may place a greater emphasis than Economics students on teacher qualities because these qualities are taught and examined in their professional development coursework. Qualities essential to instructional
success are discussed and modeled in order to prepare these future educators for success in their own classrooms.

Based on this finding, it may be that professors in the School of Education are held to a higher standard of performance than faculty in other disciplines. Yet, living up to this higher expectation and standard of performance may not be considered when comparing student evaluations of faculty between disciplines. There is also a related argument that students give lower evaluations to faculty who teach very difficult classes than faculty from classes in the student’s major or classes that are generally thought of as being easier. Based on the findings from this study, faculty in Schools of Education could argue that their student evaluations are based on higher expectations for good teaching because the students are aware of what good teaching should look like. Many universities compare an individual faculty rating to other faculty ratings within the same school but also to other disciplines across the university. Our findings suggest that this practice may be questionable, given that student expectations may be influenced by their academic tracks.

Even though females and males differed on their assessment of teacher qualities on only three questions, it serves as an important reminder of gender differences in our classrooms. As a faculty member, one should be alert to all diversity in the classroom. It is important to respect and value both males and females, while holding both genders to the same high expectations.

Surprisingly, one of the lower ranked qualities in this study was “makes class fun.” Furthermore, the importance of “makes class fun” was lower for students who had higher GPAs, were older, or had completed more years of study. This finding may be inconsistent with a commonly held notion that students simply want to be entertained in the classroom. This finding also suggests that placing an emphasis on being entertaining may be counterproductive for faculty as it does not focus on the expectations of successful students. It is important to pique students’ interest by engaging them in stimulating, interesting discussion and activities; however, an emphasis on creating an entertaining
environment should be secondary to other qualities. It is conceivable that placing too much of an emphasis on making class fun may lead to lower scores on student evaluations of teaching.

The lowest ranked quality valued by students was “use of technology.” This is particularly noteworthy, given the ubiquitous focus on the adoption of technology in education. The quality of technology integration is more important than the quantity of technology in the classroom. Utilizing technology during instruction may create a learning curve for both the instructor and the students depending on the technological tools used. Learning the technology may become a barrier to learning the content. The implementation of technologies should be supported by empirical studies documenting their effectiveness.

**Implications for Future Practice and Research**

In this study, Teacher Education students had higher expectations of teacher qualities than the Economics students in over 2/3 of the qualities analyzed. This finding suggests that student evaluations of faculty may need to be tailored to specific academic disciplines. Many other studies concur with this finding. Quality of teaching itself is a discipline-specific construct as disciplinary differences influence beliefs about the nature of knowledge and learning, teaching practices, and perceptions about what is effective teaching and how to evaluate it (Braxton & Hargens, 1996; Cashin, 1990, 1995; Hutchings & Shulman, 1999). Therefore many scholars have advocated for discipline and culture-specific faculty evaluation systems (Aubrecht, 1984; Cashin, 1990; Geis, 1984).

This study ranked important qualities students want in their instructors. Faculty would likely benefit from striving to develop these qualities. Adopting these qualities of an ideal teacher might lead to improved student learning outcomes as well as improved SETs.

A final implication for practice is for post-secondary institutions to provide pedagogical training for faculty. Many college-level faculty have limited knowledge of pedagogy even though they are knowledgeable in their content area. Faculty could be encouraged to attend professional development
opportunities that focus on communicating and conveying knowledge appropriately. They might also receive training regarding grading practices. A common tool used to help ensure fair grading practices is the use of a rubric in grading. The faculty member may provide the grading rubric at the same time the assignment is made. A grading rubric helps the students to cover the important points and also helps the grader remain consistent.

Further research is needed to determine if student evaluations of faculty across many disciplines vary. In addition, if all evaluations are treated equally, then the use of student evaluations as a basis for faculty promotion and tenure may need to be investigated based on the findings from this study.

Additional research could be conducted to determine the reasons students ranked the use of technology in the classroom so low. Further research could determine whether the use of technology improves student learning outcomes, student satisfaction, and content mastery.

Limitations

The findings of this study may not be applicable to students or settings that differ from those in this study. Replication with students from different settings may serve to strengthen the external validity of this study. Some of the data analyzed in this study were self-reported (e.g., student age, classification, gender); these data were not verified.

CONCLUSION

This study of 338 students in Teacher Education and Economics disciplines resulted in some interesting findings. As students ranked faculty qualities, they selected “knowledgeable,” “conveys knowledge,” and “grades fairly” as the most important. Teacher Education students placed a significantly higher value on 15 (68%) of the 22 qualities when compared to Economics students, revealing the differing values of students in different academic disciplines. Notably, students ranked “use of technology” as the least valued of the 22 faculty qualities assessed, and students who were older or stronger academically placed lower emphasis on “makes class fun.”
The findings from this research suggest that faculty performance should not be compared across disciplines because students have different expectations from one discipline to the next. Furthermore, student evaluations of faculty teaching should be tailored to specific disciplines. Additionally, these findings may help faculty focus on qualities that students value most. For example, faculty may want to spend more time learning how to convey knowledge and grade fairly than on integrating the newest technology or making the class fun. Knowing the expectations of students may be helpful as faculty pursue effective teaching.
REFERENCES


AN INVESTIGATION OF TECHNOLOGY INTEGRATION FOR TEACHER PREPARATION PROGRAMS

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Abstract

Teacher preparation programs are faced with the challenge of providing programs that develop both faculty and students as effective technology integrators (Bannister & Vanatta, 2006). The purpose of this study was to explore technology needs of teacher preparation programs. This article reviews findings from a 2013 survey of school leaders and teachers utilizing a one-to-one technology initiative.

PURPOSE

The U.S. Department of Education developed the National Educational Technology Plan (2010), titled Transforming American Education: Learning Powered by Technology. According to this plan, the challenge for our education system is to leverage technology to create learning experiences that enable innovative teaching practices in order to promote creative and productive students prepared with 21st century literacy skills. “Whether the domain is English language arts, mathematics, sciences, social studies, history, art, or music, 21st-century competencies and such expertise as critical thinking, complex problem solving, collaboration, and multimedia communication should be woven into all content areas” (U.S. Department of Education, 2010, p. xi).

The National Educational Technology Plan (2010) also addressed the need for best practices for the use of technology in preparing educators. More than 1000 districts across the United States have
developed one-to-one technology initiatives (Apple Press Info, 2012). The teachers in these schools receive training but are not always knowledgeable about ways to integrate technology into the classroom (Pilgrim & Bledsoe, 2012). Teacher preparation programs must prepare teachers to work in technology rich environments. Many universities offer a technology course, where pre-service teachers learn skills and knowledge about technology and pedagogy. However, due to gaps in technology abilities, professors of these courses often spend class time on skills and not technology integration (Bannister & Vanatta, 2006). As more schools consider one-to-one technology initiatives (Sauers & McLeod, 2012), the teachers participating in these initiatives gain insight about technology integration and skills needed to teach effectively in this environment. The purpose of this study was to survey teachers involved in one-to-one technology initiatives in order to explore technology potential needs for teacher preparation programs.

**BACKGROUND**

Technology spending in the United States K-12 schools averages an estimated four hundred dollars yearly per student (Johnson, 2012). Yet, research indicates that technology is not effectively integrated into the curriculum (Bannister & Vanatta, 2006). Some teachers experience uneasiness with technology and neglect its use in regular instruction. In addition, many skilled teachers do not include technology in daily lessons (The Horizon Report, 2010). Regardless of reasons for limited use of technology, research supports the need for technology integration (U.S. Department of Education, 2010). Technologies are becoming more commonplace in the classroom, but “just giving people devices has a really horrible track record” (Gates, 2012). Teacher educators must integrate technology into coursework to reinforce 21st century skills. Teachers need this knowledge as they train for jobs in elementary and secondary classrooms.
Texas Standards

The Texas Education Agency (TEA) expects teachers to integrate technology. TEA’s Texas Knowledge and Skills (TEKS) for Technology Applications included six strands: creativity and innovation; communication and collaboration; research and information fluency; critical thinking, problem solving, and decision making; digital citizenship; and technology operations and concepts (TEA, 2011, p. 1). According to the TEKS, students use communication, collaboration, and creativity throughout the strands. Communication, collaboration, and creativity utilize 21st century skills and must be taught through technology integration across all subject areas. In an effort to prepare teachers for technology integration, the teacher educators at the University of Mary Hardin-Baylor partnered with a district in Central Texas to determine knowledge required of new teachers in the areas of technology skills, technology integration skills, and web literacy skills.

New Literacies

Many technology tools provide opportunities for student-centered learning, where students share knowledge and construct meaning through an online medium. From a cognitive perspective, researchers seek to understand the skills required for effective online reading comprehension (Jetton & Shanahan, 2012). Access to online information in school enables many opportunities for students. At the same time, it introduces many concerns about safety and accuracy. Web literacy is a term used to explain knowledge an individual needs to find and navigate information, to examine content, to analyze the author of a Web site, and to see who is linked to a site (November, 2008).

Other literacy terms, such as new literacy and digital literacy, currently reflect how we think of literacies. New literacies are skills that “allow us to use the Internet…to identify important questions, locate information, critically evaluate the usefulness of that information, synthesize information to answer those questions, and then communicate the answers to others” (Leu, Kinzer, Coiro, & Cammack, 2004, p. 1572). The New London Group addressed multiliteracies and recognized the multiple ways of
communicating and making meaning, including such modes as visual, audio, spatial, behavioral, and gestural (New London Group, 1996). Web literacies and new literacies remain new concepts for many teachers. New ideas about what it means to be literate guided methods and survey development.

**METHODOLOGY**

Teacher preparation programs face the challenge of providing programs that develop both faculty and students as effective technology integrators (Bannister & Vanatta, 2006). To facilitate technology integration for preservice teachers, the University of Mary Hardin-Baylor requested feedback from a school district implementing one-to-one technology initiatives. Schools participating in one-to-one initiatives may provide insight into technology needs of new teachers.

Qualitative data were collected from administrators and teachers in schools participating in a one-to-one technology initiative. This project represented applied research, as the university intended to use the feedback for classroom improvement and program assessment. The following research question guided the study: What knowledge and skills do new teachers need in order to work in a one-to-one technology initiative?

**Population**

The data represent feedback from 32 administrators and teachers participating in a one-to-one iPad initiative in a Central Texas school district. Participating administrators and teachers from both elementary and secondary schools were involved in the survey. All principals in the district (N=13) received the survey invitation. Twelve high school teachers received the survey invitation. These participants taught students with net books for school and home use. Forty-seven middle school teachers, including coaches as well as core, fine arts, special education, and elective teachers, received the survey invitation. These participants taught students with iPads for school and home use. Approximately 9 elementary teachers received the survey invitation. Six of these participants taught fifth graders with net books for school and home use, and three of these participants taught fifth graders with iPads for school.
and home use. The district’s goals are to have all middle school and secondary students participating in one-to-one iPad initiatives by 2014. All but one school participating in a one-to-one technology initiative received the survey. The major high school, in its first year of a one-to-one iPad initiative, refrained from participation upon the district’s request.

Two of the schools involved in the survey implement Project Based Learning. Project Based Learning utilizes a student-centered model that emphasizes 21st century skills. According to the district, this model was intentionally selected to be used with the technology initiative in order to engage students in learning opportunities integrating curriculum and real world problems, where students develop meaningful solutions. In all, 81 administrators and teachers (including core teachers, specialists, coaches, special education teachers, and STAAR tutors) received email invitations to participate in a survey about technology needs. The survey was anonymous and voluntary. Thirty-two administrators and teachers responded to the survey, with a response rate of 39.5%.

**Data Collection and Analysis**

During the spring of 2013, email invitations were sent to principals of the schools participating in one-to-one technology initiatives. The survey was supported by the district, and the principals of schools participating in one-to-one technology initiatives agreed to forward the email to teachers in the school or in the participating grade level. The email included a link to a questionnaire on Survey Monkey. The online survey asked the following open-ended questions:

1. What technology skills do new teachers need in order to work in a technology rich environment?
2. How should new teachers integrate technology into their instructional practices in order to make learning more engaging for students?
3. In addition to technology standards, including the TEKS, what do new teachers need to understand about web literacy in order to promote online activities?
Qualitative data were collected from participants’ responses to the three open-ended questions. Responses to each question were analyzed and categorized using a coding system where patterns and ideas led to emerging themes. Through content analysis, similar responses from each question were systematically coded and tallied in order to determine which concepts and ideas were most common across survey responses. For example, in question one, various technology skills mentioned by participants were coded and categorized according to the types of skills participants felt new teachers needed. The frequency of the skills, determined by most used keywords, was counted in order to summarize the data numerically. Percentages were used to identify the most frequent responses. Both researchers served as co-raters and collaborated during coding. Emerging themes provided recommendations for the teacher preparation program.

FINDINGS

Question One

Thirty-two participants responded to question one. All but one participant provided concrete suggestions for new teachers. One participant answered “I don’t know” to all questions. Twenty-seven out of 32 participants (84%) responded to question one with suggestions about technology hardware and software used by teachers (e.g., computers, tablets, programs). Many specific computer programs and iPad applications were recommended and are included in Table 1. Nine of the participants described the computer skills needed as basic (copy, paste, document cameras, etc.). One participant stated that skills needed to be intermediate or advanced. Another participant stressed the importance of excel documents for data analysis, commenting that, “Teachers need to be able to use Excel more proficiently than ever before. The data that is so important to our understanding of students is best represented in this format.”
Although the majority of the participants (84%) noted specific computer skills (hardware and software skills) necessary for educators, 28% focused on the importance of a broad range of digital technology skills. These participants reported that teachers needed to be trained to utilize online resources. For example, several participants mentioned online resources that include social networks and collaboration. Others mentioned Google Docs, Dropbox and the ability to upload and create documents. Finally, one participant commented that new teachers should “know what to do if technology is down for the day!”

Participants also provided responses that reflected knowledge beyond that involving technology tools and resources. These participants, (22%), mentioned the importance of understanding how to integrate technology. For example,

*The future of education is in being able to integrate new ways of technology into the classroom. . . . ongoing, actual application of different technology resources, classroom management skills that involve technology and the new freedoms and temptations student receive. They need to understand how to implement technology in the classroom to enrich the learning environment. Know how to utilize the internet for resources to use in the classroom. Be up-to-date on how to use programs on your laptop to guide students to use the right tools. (Know) how to use technology to enhance instruction.*
Question Two

Thirty-two participants responded to question two. Nine out of 32 (28%) participants reported that technology should be integrated into classroom practices daily, either as a tool or to engage students in learning. These participants responded with statements about the importance of technology tools. Many of the participants listed examples of ways they use technology daily. The calendar application, videos, podcasting, interactive videos, quizzes, and warm-ups comprise a few daily uses mentioned by participants.

Twenty out of 32 participants (63%) focused on the student-centered aspect of technology integration. These participants responded with specific examples of how teachers should integrate technology. For example, projects, simulations, problem-based learning, exploration, and motivation through engagement were student-centered uses of technology provided by participants. These participants also focused on the importance of student motivation. One participant commented, “Have students ‘find’ the information on their own. Usually when they take ownership of the work, they tend to do better and absorb the information being taught as opposed to being handed notes or copying notes.”

Eight participants suggested that student research provides a means of integrating technology into instructional practices. In addition, participants responded with ways teachers should engage students through collaboration and research. One participant mentioned the use of technology for synthesizing and expressing, and two participants mentioned technology integration with collaboration:

*Teachers should allow students to use technology to create and demonstrate information. Technology should not be used as a one-way presentation of information, but as a two-way creation.*
*Provide a wide range of experiences and not just games and video clips. Students should be provided the opportunity to experience and explore technology. Give students the opportunity to collaborate with others both in the classroom and outside the classroom (share/collaborate with others they may/may not know).*
Question Three

Only 24 out of the 32 participants responded to question three. Out of the 24 that responded, 17 (71%) addressed web literacy. However, most participant statements were vague (53%) and reflected a lack of understanding about web literacy. Twelve out of 24 participants (50%) suggested new teachers understand copyright and fair use policies. Eight of the 24 participants (33%) recommended new teachers understand the logistics of Internet searches and the importance of online navigation skills. Finally, four participants (17%) mentioned communication expectations and online interactions. Copyright laws, Internet navigation, and communication/collaboration skills are all a part of web literacy. One participant cited Alan November’s work and recommended his work with web literacy as a resource. Another participant, instead of addressing web literacy, commented that, “The computer is a tool and does not replace the leadership, knowledge, and skills of good teaching.”

Finally, it is important to note that four participants insightfully mentioned the need for teachers to spend time previewing the topic to be researched.

*Teachers need to understand appropriate ways to search for information from a student’s perspective and be able to manipulate time in order to teach this skill. Also, depending on the grade level, they will have to do a lot of pre-work for guidance and as a way of communicating expectations for web based activities. They should go in and do the work first before assigning it to a student. Navigate all aspects of the assignment or project so that they are knowledgeable and can answer questions faster than the student can get off task or become distracted. Though the site works at home, many great educational sites are inaccessible in the classroom due to blockages. It’s important that new teachers check this out before a lesson flops during execution because of technical difficulties.*

CONCLUSIONS & RECOMMENDATIONS

Conclusions drawn from the survey responses evolved around three emerging themes: Web 2.0 skills; web literacy knowledge; and student-centered instruction. Participants in this study provided many recommendations about technology, but what stood out as a factor through all three survey questions was the emphasis on particular digital literacy skills. As seen in Table 1, many of the technology skills
provided as a response to question one included those skills necessary for online communication and collaboration. In other words, the digital skills listed in the table require teacher knowledge about Web 2.0 applications. Where Web 1.0 applies to one-way online content delivery which helps students locate and consult information, Web 2.0 technologies favors interaction. Web 2.0, also referred to as the read-write web, enables users to publish and participate in web-based activities without having to be proficient in html programming (Davies & Merchant, 2009). Improvements in Internet accessibility and speed have contributed to the popularity of communication tools such as blogs, wikis, and social networks (Bannister, 2008). Web 2.0 is the tool frequently used by youth as they engage in free dialogue and feedback from international audiences (Mills & Levido, 2011).

A Public Broadcasting Service survey reported that 30% of the teachers they surveyed used digital media for Web 2.0 uses such as blogging, social networking, and website contribution (Grunwald Associates LLC, 2009). Although teachers may use Web 2.0 tools in the classroom, Assellin and Moayeri (2011) suggested that teachers used Web 2.0 tools such as Wikipedia to acquire information instead of to interact with information. The interactive component, adding or editing information, is a powerful application of Web 2.0 technology. Educators should embrace technology with authentic applications to prepare students for a world where professionals routinely use the Web and tools, such as wikis, blogs, and digital content for the research, collaboration, and communication demanded in the workplace (U.S. Department of Education, 2010). Therefore, preservice teachers may benefit from exposure to Web 2.0 tools and applications.

The findings support student research as a way to integrate technology into classroom practices and to engage students. However, the survey responses indicated a need for knowledge and skills related to navigating and searching websites. New teachers must understand and apply web literacy to technology integration. Their students will encounter large amounts of information through online research and must be able to critically evaluate the website, the content, and the main message. Online
navigation is complex as it involves hyperlinks, visuals, and other media. According to Alan November (2008), being web literate means, “you understand how search engines work and how information is controlled . . . you have the skills to perform powerful searches” (p. vii). The teachers in this study seemed concerned with plagiarism and the need for student’s to understand copyright and fair use laws. Web literacy, including knowledge about plagiarism, applies to all disciplines and is critical to technology integration.

Finally, survey responses supported student-centered instruction as an important aspect of technology integration and engagement. Survey comments referred to the use of projects for technology integration. Many of the teachers who received the survey invitations participated in Project Based Learning, which employed student-centered learning as an instruction model. With Project Based Learning, students solve real world problems through projects integrating inquiry and technology (Weizman, Schwartz, & Fortus, 2008). Therefore, it makes sense that teachers utilizing this practice promoted the idea of student-centered learning. In addition, one-to-one initiatives lend themselves to hands-on learning (student-centered), which is typically a concept that involves learning by doing. The issue with a technology device for hands-on learning is the students often know more about the technology than the teacher. Therefore, students’ skills are not scaffolded and improved through hands-on learning. In fact, the students may or may not receive hands-on practice related to disciplinary content. One participant commented that new teachers need a “willingness to be in an environment where they will learn from their students (as students often know more about the technology than students)” . . . Another participant commented, “I was shocked that I didn’t know a lot of the apps and things that iPads can do. The students were teaching me about certain things.”

Teachers need to be prepared with knowledge about technology and technology integration. In order for this to happen, teacher preparation programs must consider technology integration in the college classroom. Integration occurs to some degree, but colleges and universities should be at the forefront of
advanced technology initiatives. One-to-one initiatives in K12 settings have received both positive and negative reviews (Sauers & McLeod, 2012). Imagine the improvement that might occur in these technology initiatives if the teachers had been trained to teach in a technology rich environment. In other words, perhaps teacher preparation programs should consider one-to-one technology implementation, where each teacher candidate is issued a technology device for use in and out of the classroom. The technology could be issued to students enrolled in the program, or the university could require students to bring their own technology to class.

Technology is not an isolated subject. Instead, it should be considered a tool for instruction. As long as instructors model appropriate pedagogy, teacher candidates experience the use of technology to foster learning. This concept, *technology* (Stevens, 2011), may be the missing link in teacher preparation programs. The importance of hands-on learning has been emphasized in education, both formally and informally, for years. Educational theorists like Dewey (1980) supported learning using psychomotor experiences. Hands-on learning is learning by doing, which enhances one’s ability to think critically. Teachers must be prepared to meet the challenges of 21st century learning. If teacher candidates become engaged in *technology* through hands-on learning, they may internalize the skills necessary to support their students in technology rich environments.
REFERENCES


Abstract

Talented Teachers in Training for Texas (T4) is a recruiting and training program for STEM high school teachers. We describe the program’s three distinctive recruiting events – a STEM Master Teacher Job Shadow, a NASA Aerospace Teachers Program, and a STEM Day – along with T4’s training focus – a multi-year scholarship and mentoring program designed to invite pre-service teachers into an authentic, sustained academic community of practice supported by high levels of engagement with caring STEM practitioners.

INTRODUCTION

One of the enduring challenges in teacher preparation today is the recruitment and retention of highly-qualified science and mathematics teachers. As the proportion of careers demanding a strong background in science, mathematics, engineering and technology (STEM) continues to rise, so does the concern for addressing the need for mathematics and science teachers who are able to engender interest and passion among their high school students for majoring in STEM fields and pursuing careers in STEM-related occupations beyond college (National Research Council, 2011). Moving beyond workforce development needs, the staffing challenges of mathematics and science teachers has also been linked to other educational problems in the U.S., including the low performance of American students on international comparisons in mathematics and science, lower national economic competitiveness,
declining engineering majors among American college students, and an increasing minority achievement gap (Rising Above the Gathering Storm, 2005).

In a recent national study that examined the supply and demand for mathematics and science teachers, Ingersoll and Perda (2010) found that the problem of STEM teacher supply and demand is two-fold. First, the number of mathematics and science teachers currently being prepared is insufficient to fill the shortages in light of increasing student enrollments and the pace of teacher retirements; also, higher rates of turnover and attrition exist among STEM teachers which leaves a smaller cushion in the workforce to re-supply STEM teachers in schools. Rates of turnover and attrition are highest in hard-to-staff, high-need school districts. Thus, addressing the persistent critical shortage of mathematics and science teachers in schools today requires not only improving approaches to STEM teacher recruitment but also designing recruitment processes that will lead to improved retention and success among novice mathematics and science teachers in hard-to-staff school districts.

Talented Teachers in Training for Texas (T4), a Robert Noyce Scholarship program funded by the National Science Foundation (NSF), was conceptualized to raise awareness of teaching opportunities throughout the local STEM community, to offer attractive entry points to high school teaching experiences, and to target a limited number of aspiring teachers, called T4 Scholars, for authentic inclusion into the STEM teaching community. T4 targets students who are majoring, or considering majoring, in STEM fields at Stephen F. Austin State University and at Angelina College, a T4 partner community college. T4 Scholars are prepared for teaching in high-need high schools through extensive observation and interaction with in-service teachers, group reflection; academic mentoring that begins in their junior and senior years of college, novice teacher support during their first three years in the classroom, professional support through paid conference attendance, and academic scholarship support totaling $30,000.
T4 EXPOSURE AND RECRUITING STRUCTURE

The T4 recruiting effort is intended to raise awareness among a broad student population about careers and opportunities in STEM teaching. In addition to publicizing the Noyce scholarships, our advertising focused on three distinctive recruiting events: a STEM Master Teacher Job Shadow Program, a NASA Aerospace Teachers Program, and a STEM Day Program. Since “getting the word out” is everything, we set attainable publicizing goals for launching each program and sought to expand recruiting as the programs repeated. In our first year we visited 20 mathematics and science college classrooms and then expanded to 33 visits in year two. We doubled the number of fliers printed, added video testimonials to our website, and tapped the recruiting network of those students who had already benefitted from the T4 programs. We also held evening information sessions for prospective participants. Over 100 students became involved in these programs within the first two years of T4, and many more have heard about the T4 program and careers in STEM teaching.

STEM TEACHER JOB SHADOW

The STEM Master Teacher Job Shadow consists of one full forty-hour week of working with a trained Master Science or Mathematics Teacher after the university’s spring semester and while high schools are still in session. T4 benefits from the fact that our university has an active Robert Noyce Master Teaching Fellows program, an NSF Math Science Partnership cohort of teacher leaders, and a Math, Science & Technology Teacher Preparation Academy for high school teachers. These programs provide a network of excellent teachers for the job shadow.

Master Teachers and T4 Recruits meet together prior to the scheduled event week. Having these meetings allows Master Teachers and the T4 Recruits to become acquainted and discuss school protocols such as dress code, parking, office check in, etc. Master Teachers also clarify their professional expectations for the week. Additionally, Master Teachers receive advice on what has worked well in past shadowing events from previous participants.
During the job shadow experience, T4 Recruits complete reflection journals each day and upon completion of the experience attend a half-day debrief with their Master Teachers. As part of the academic support, the T4 Recruits receive a $450 stipend for the week and attendance at the Saturday debrief session is required. Reflection journals allow us to capture a wealth of perspectives.

In preparing for the job shadow, Julie (pseudonyms used throughout) wrote “I am … extremely curious about the overall atmosphere of a high school and seeing it through the student’s eyes because I have never been in a public high school before – I was homeschooled.” At the end of the week, she praised the job shadow but indicated she did not think a career in the public schools was for her. Better to decide based on experience! Others drew different conclusions. After the experience, Erica wrote “I am now, more than ever, inspired to teach and pursue this career. I saw things (abilities and creativity) in myself that I didn’t see before.”

The Master Teachers also raved about the experience. “They got five day’s work… they got to see the reality of it. Not just ‘this hour’ every single day.” Another said, “I think the week at a time is much more valuable than the little snippet… just to push through even when you don’t feel like it. They got to see everything.” Nearly all Master Teachers indicated an eagerness to be included for participation in future events and incorporate other Master Teachers’ ideas in the future.

STEM DAY

Faculty at our university had discussed holding a STEM Day for years, but T4 catalyzed the event to actually occur. The vision was to bring in hundreds of local high school students to our university to do exploratory activities and hear speakers from a variety of STEM fields. More STEM majors and more visibility for STEM fields make a richer candidate pool of potential STEM teachers. Although we believed this to be unquestionably a best practice, there was an obstacle. Noyce Scholarship programs last at most five years (including planning). It takes seven years for a high school sophomore to develop interest in STEM, discover teaching as a passion, and get trained (assuming a four year university degree
plan). Using STEM Day events to garner data documenting STEM recruitment was not feasible. Our solution was to utilize college students, potential T4 Recruits, in all of the STEM Day activities as guides and co-presenters. Doing so allowed us to incorporate an event into our program that could substantially affect STEM interest of students at a younger age while simultaneously addressing the goals of T4.

On our first STEM Day, a total of 12 school districts attended with 243 students and 34 teachers. Of the students who attended, approximately 63% reported being in the top 10% of their class in terms of mathematics and science ability. (Response rate was 70%.) In the post-experience survey, 81% of students indicated that their interest in STEM had increased (25% “increased dramatically”). The increase in knowledge about STEM careers was even higher with 36% indicating their knowledge had “increased dramatically” and 60% indicating it “increased somewhat”. Teachers were also encouraged by the effort to reach their students. In a follow-up survey, several commended “the diversity of activities” which had been available at STEM day. They especially appreciated the hands-on activities, the professors sharing their passion about their fields, and students being exposed to the STEM careers panel. University faculty shared the enthusiasm about finally implementing STEM Day.

Unfortunately, our success appeared to be meager among the university students we incorporated as guides and co-presenters. We were able to involve over 80 college students in STEM Day, but as a result many had only cursory roles. In the follow-up survey, 96% indicated that their interest in high school teaching had not changed. (This may have been affected by the fact that around half of the university students involved were either seniors or graduate students.) Around 50% of guides’ written comments asked for “more organized instructions for students volunteering.”

For the second annual STEM Day, the number of university students participating was reduced slightly to 55 students with more specific activities. Guides were assigned to a single cohort of students throughout the morning activities, acting as leaders and mentors. This proved to have a significant impact on our recruiting efforts. Instead of having only 4% of the university students report increased interest in
high school teaching, in the second year, 42% indicated their interest in high school teaching had increased. This increase was achieved at the same time as the overall program grew to 266 high school students and high school student interest levels remained high.

NASA AEROSPACE TEACHERS PROGRAM

One of the greatest assets of the T4 program is a dynamic partnership developed with NASA whereby prospective teachers are embedded with high school groups in NASA’s High School Aerospace Scholars (HAS) program as junior teachers. HAS identifies talented high school students from across Texas and Oklahoma, trains them during the school year, then brings them to NASA’s Clear Lake facility for a one-week experience where they work on STEM challenges in teams of ten. Each team is assigned a certified classroom teacher, a junior teacher from T4, a NASA professional, and has access to a wide variety of other NASA personnel. The program enjoys a phenomenal reputation and was much enjoyed by the university students who participated as junior teachers.

In our first year, 12 T4 Recruits from our university and partner junior college participated. Afterward Parker said, “Seeing [students’] drive to achieve is one of the more inspiring things,” and Aleisha said it opened her eyes to the bonds that teachers and students develop. Two thirds of junior teachers either had their interest in teaching increase or their previous commitment to teach solidified.

After the initial year, we established clearer expectations for T4 Recruits going into the program concerning what they would be doing by adding a pre-experience orientation with past T4 participants in the NASA Teacher Program. Additionally, NASA now provides information to the Master Teachers regarding the participation and expectations for junior teachers.

THE T4 SCHOLAR COHORT STRUCTURE

Although our recruiting programs broke new ground in a number of directions, our largest effort has been focused on our scholarship recipients - our cohort of T4 Scholars. T4 Scholars meet with
university faculty and teaching mentors biweekly to discuss aspects of teaching, examine content and explore challenges for new teachers, meet with practitioners (sometimes novice teachers) from the field, and most of all to become a supportive, sustained academic community. Regular classroom observation and reflection is an integral part of the program, as are local, regional, and national conferences. This community’s professional, monetary, and relational support is producing a positive effect on many of the T4 Scholars as the following stories illuminate.

Like many of our T4 Scholars, the money was a big incentive for Parker. As a high school senior, he had been accepted to a top private university. But during his senior year of high school, life as he knew it fell apart. Through changing circumstances in his family, he ended up on the streets. Although a bright student, accepted to a top school, he did not attend a university or college at all that fall. By the spring semester, Parker was able to begin attending a community college. A year later, he transferred to our university.

With limited financial or emotional support, college can be a challenge and Parker found this was true in his situation. He wanted to do something great with his life, which in his mind most likely meant becoming a doctor. He aced general physics in the fall and was earning an A in botany when a speaker came to his class to talk about the T4 programs. In his words, “The T4 program was kind of like a key to the door. I guess it kind of helped push me along.” He signed up for the NASA teaching experience. He also decided to take the leap and apply for the T4 scholarship, knowing that it meant committing to teach.

Although the financial support was important to Parker, the relational support was just as valuable. Our program has a veteran teacher with 20 years in the high school classroom who is mentoring Parker’s cohort. By the end of the first meeting with her, Parker and another student were calling her ‘MOM’ – (Mentor Of Math … & Science). While in the T4 program, Parker will be mentored by MOM not only through college but also during his first three years in the classroom.
Typical teacher preparation programs provide mentoring (by an advisor, a student teaching mentor, etc.) but it is rarely the same person throughout the program. Similarly, school districts routinely assign mentors to new faculty, but these mentorships can fluctuate. Our mentorship is different. It begins at least 4 semesters before a future teacher graduates college, and the same mentor follows the T4 cohort through teaching observation, student teaching, and into the classroom. Even if the teacher changes districts in the second or third year, the mentor will not change, allowing for a more authentic, sustained community of practice where self-reflection, collaboration, and stronger confidence in one’s teaching ability can flourish.

A STEM FAMILY

The most unexpected benefit of the T4 cohort model is the “family” as our T4 Scholars like to call themselves. In addition to biweekly meetings, online discussion, and traveling together to conferences and events, T4 Scholars began requesting opportunities to spend time together socially as well – bowling, dinner, a camping trip. Teaching is a challenging endeavor, and effective mentoring works best through developing relationships, preferably outside the teaching day (Odell, 1990). For gifted young academics with lacking support systems who want to make a great contribution with their lives, our program has turned out to be a special haven.

Many T4 Scholars have experiences that parallel Parker’s. Erica was a passionate, overcommitted 22-year-old who had just changed her major from accounting to mathematics. Unsure of what she wanted to do with a mathematics degree, her advisor shared information with her about the T4 programs and considering a career in teaching. Erica realized that teaching had always been in the back of her mind, but she had resisted the urge to pursue it. She comes from a supportive family - a father who is a self-described “third generation blue collar grunt” and a stay-at-home mother. Both were proud of their daughter but unable to help her navigate teacher preparation. After much thought, Erica decided to apply for the Job Shadow and the Noyce Scholarship.
A year into the T4 Scholar program, Erica is optimistic. She believes she’s getting a “realistic view of what goes on in the classroom” rather than “a textbook perspective.” From the full-week job shadow to the biweekly meetings with MOM; from the dinner discussion with a first, a second and a third year teacher about the highs and the lows of teaching, to the networking opportunities provided from attending the national NCTM conference, Erica is experiencing what her parents could not offer her – a gentle immersion into the world of teaching before facing the high school classroom as an-inservice mathematics teacher.

Erica’s family was so grateful for the opportunities afforded Erica that her father contacted the project director with this email:

My wife and I wanted to express our sincere appreciation for the interest and support you and the department have provided to our daughter. I am sure that we can never know the full depth of what you have done for her. And you cannot know the depth of what you have done for our family as a whole as well as for Erica.

Parker and Erica came from different backgrounds but ultimately benefitted from the same things: financial and community support founded on the basis of an academic community of supportive university faculty and mentor teachers willing to strengthen the pipeline of STEM teachers in high need schools. Not surprisingly, students in T4 who had the greatest monetary need expressed more passion about pursuing the scholarship. It is interesting that the same has proven true for students in need of mentoring relationships.

CONCLUSION

The U.S. continues to face a critical shortage of STEM professionals, particularly in the teaching field. Being qualified is insufficient. We need to recruit and equip teachers to inspire our youth to see the beauty and applicability of science and mathematics. In the 2010 Report to the President, the President’s Council of Advisors on Science and Technology, recommended:
The Federal Government should set a goal of ensuring over the next decade the recruitment, preparation, and induction support of at least 100,000 new STEM middle and high school teachers who have strong majors in STEM fields and strong content-specific pedagogical preparation, by providing vigorous support for programs designed to produce such teachers. (PCAST, p. X)

The need for new teachers, exacerbated by the number of teachers that leave the field annually as a result of lack of professional support (Ingersoll and Perda 2010), makes it imperative that colleges and universities recruit more students into STEM teaching fields and find creative ways to support novice teachers.

Talented Teachers in Training for Texas uses the four programs described above to address these concerns. The Master Teacher Job Shadowing Program, the NASA Aerospace Teaching Program, and STEM Day raise awareness of STEM teaching opportunities and initiate the equipping process for those considering the teaching field. The T4 Scholars Program invites pre-service teachers into an authentic, sustained academic community of practice supported by high levels of engagement with caring STEM practitioners. Initial results demonstrate positive outcomes in both areas. Our program has been quantitatively successful in STEM recruitment and preparation, and the transformative quality of the academic community developed bodes well for future teachers’ persistence in the field long after college.
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Awareness of Diversity: Teacher Education Students’ Reactions to Diversity Following a Mentoring Experience

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Michelle Kitchen, Ph.D.
Midwestern State University

INTRODUCTION

Teacher education is challenged with preparing teachers to work effectively with culturally diverse students. While the United States’ student population is growing increasingly diverse, the teacher population continues to be very homogenous. The majority of teachers continue to be Caucasian, middle class females (National Collaborative on Diversity in the Teaching Force, 2004). Singh estimated that by the year 2050, 95% of the teachers would be white, middle class females (cited in Kea & Uitey, 1998). It is essential therefore, that teachers acquire the appropriate attitudes, knowledge, and dispositions needed to work effectively with students who come from varied cultural backgrounds. Sleeter (1992) advocates that dominate -group, monocultural teachers must be exposed to multicultural experiences. They must learn to see reality from a variety of perspectives.

Teachers must give students of all backgrounds the opportunity to learn, and teachers must have high expectations for student learning (Gardner, 1991). Discovering individual ability is a starting point for teachers to address individual learning needs and goals. Teachers who understand all students have the ability to learn and who can addresses each student as an individual will be more effective. Teachers must understand how to build on the student’s current ability regardless of any impairment or learning barriers. In order for a teacher to be effective at addressing each student’s needs, they must first understand their own “desires, fears, and capacities” (Marzano, 2003, p. 43).
Many teacher education programs are represented by the dominate-group (Caucasian) of our society. Dominate-group students speak the acceptable school language. Their parents’ life-styles and values are the norm. As the population in Texas has become more socioeconomically and culturally diverse, a greater need exists for teacher educators to be better prepared to teach students of diverse backgrounds (TEA, 2011). By requiring students to take courses in diversity and offering students opportunities for field experiences with students of diverse backgrounds, universities may be able to provide teacher education students with an opportunity to change their beliefs about teaching students from backgrounds different from their own. Many college faculty wonder whether teacher education candidates are receiving the necessary training to become effective teachers of diverse student populations.

LITERATURE REVIEW

Teaching self-efficacy focuses on various aspects of a teacher’s belief that he or she has the confidence to effectively carry out the responsibilities as a teacher. One aspect of teacher self-efficacy focuses on the teacher’s belief that he or she will be able to effectively integrate culturally responsive teaching into his or her classroom (Siwatu, 2007). Klug, Lukey, Wilkins, and Whitfield (2006) suggest the value of integrating diversity information and experiences throughout the coursework of undergraduate education majors is beneficial to altering existing beliefs about those different from oneself. In addition, providing diverse experiences may also help education majors and teachers increase their teaching self-efficacy when working with students of diverse backgrounds.

Coursework

Some students enter teacher education programs with little knowledge of cultures and ethnic groups different from their own which may leave them feeling unprepared to teach students from different backgrounds. By offering diversity courses for undergraduate majors, many universities have sought to provide students with a greater awareness regarding racism and to provide an opportunity to learn about
beliefs different from their own (Case, 2007). Gaining an understanding of those culturally and ethnically diverse from one’s own background has become especially salient for teacher education majors, who are being prepared to educate youth from diverse backgrounds.

Although coursework may provide students with an opportunity to learn about students from different backgrounds, students with little prior experience with people from diverse backgrounds may have difficulty understanding how to apply this knowledge to their future students. One assumption about field experiences with diverse students is that it will allow prospective teachers to “develop a positive attitude, a sense of comfort, and perhaps some knowledge” (Grant & Gomez, 2001, p. 337). In addition, research suggests that many Caucasian pre-service teachers lack the empathy to work with culturally different students and that after a mentoring experience, many still lacked the empathy needed to successfully work with diverse students (Haberman, 1991; Howard, 1999). Ladson-Billings (2000, p. 2009) underscores this point when she states “no single course or set of field experiences is capable of preparing pre-service teachers to meet the needs of diverse learners. Therefore, teacher education students may benefit from field experiences in which they have an opportunity to interact with students of diverse backgrounds.

Mentoring

Presented with the experience of mentoring at a diverse school may cause anxiety and concern for many teacher education students. Many pre-service teachers were educated in a monocultural environment, and there are limits to the extent to which these pre-service teachers can relate and teach within today’s diverse school systems. Teacher education programs have attempted to provide teacher education candidates with varied experiences to enhance their understanding of diverse students. While attending a university in Texas, students in educational psychology had an opportunity to become a mentor at a local junior high, which was made up of many at-risk students who were ethnically and
socioeconomically diverse. When teachers have an understanding of their students based on their experience through mentoring, they meet the needs of all children.

The experience of mentoring provides pre-service teachers with the opportunity to explore their “desires, fears, and capacities” (Marzasno, 2003, p.43). The mentoring experience can also be a very powerful experience by challenging pre-service teachers to venture into worlds that are foreign to them. Grant and Gomez (2001, p.35) stated that, “field experiences can provide the opportunity to plant seeds of awareness that may continue to grow and develop… and pull the weeds of ignorance and misconception that all of us have about groups of which we are non-members.” By providing undergraduate students with an opportunity to mentor a student who is ethnically and culturally diverse from him or her, teacher education programs may provide pre-service with an opportunity to begin to alter their beliefs about the value of integrating diversity into their teaching. They may also have an opportunity to gain the confidence that they need to become effective teachers in diverse populations. The purpose of the current research study was to understand whether teacher education students participating in a mentoring experience with diverse students developed a new understanding and appreciation of differences associated with language, culture, gender, sexual orientation, educational background and socioeconomic class to a greater extent than those not participating in the mentoring program.

METHOD

During the regular fall and spring semesters, researchers conducted surveys in two sections of a required educational psychology course at a small public university in Texas. This course was specifically selected because it was an introductory education course and was required to integrate much of the required content from a previously required diversity course that was removed from the program. As a part of the current course, students were offered the chance to participate in a mentoring program at a culturally diverse middle school as an alternative to completing another project.
Participants

Approximately half of the students in the fall and spring semesters participated in the mentoring program, while the other half completed an alternative project. A total of 89 students (83% female, N=73) participated in the research study during the two semesters. Data from the two semesters were analyzed to determine sample similarity through crosstab analyses, and a determination was made by the researcher to combine the two data sets into one. Complete demographic information of the total sample can be found in Table 1.

Table 1
Demographics for Sample

<table>
<thead>
<tr>
<th>Ethnicity</th>
<th>N</th>
<th>%</th>
<th>Gender</th>
<th>N</th>
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<tbody>
<tr>
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<td>1</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Total</td>
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<td>100</td>
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<table>
<thead>
<tr>
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<td>Other, Education</td>
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<td>24</td>
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<tr>
<td>Senior</td>
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<td>25</td>
<td>Other, non-education</td>
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<td>8</td>
</tr>
<tr>
<td>Total</td>
<td>89</td>
<td>100</td>
<td>Total</td>
<td>67</td>
<td>74</td>
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</table>

Survey

At the beginning of each semester, students completed Part I of the survey, which included demographic items and Likert-scaled items regarding students’ beliefs about diversity. Items were used from The Personal and Professional Beliefs about Diversity Scales (Pohan & Aguilar, 1999), which measured students’ personal beliefs about diversity (ex. There is nothing wrong with people from different racial backgrounds having/raising children.) as well as students’ professional beliefs about diversity (ex. Teacher should not be expected to adjust their preferred mode of instruction to accommodate the needs of all students). Items were also used from The Multicultural Efficacy Scale
(Guyton & Wesche, 2005) to assess students’ reactions to diversity (ex. Teacher should adapt lesson plans to reflect different cultures represented in the classroom) and diversity experiences (ex. As a child, I played with people different from me.)

At the end of each semester, an identical survey was administered to the students to determine whether their beliefs about diversity changed over the course of the semester. Students were coded again as those who had mentored and those who had not.

**RESULTS**

**Independent Samples t Tests**

Initial analyses were conducted to determine whether differences existed in the two samples for each of the measured variables. Results from independent t-tests revealed that students’ reported prior diversity experiences in the fall semester sample were significantly different from those in the spring semester ($t(76)=9.72, p<.01$) as seen in Table 2. Therefore, the researcher decided to retain the data as two separate data sets, resulting in Sample 1 ($n=45, 50\%$) and Sample 2 ($n=43, 47\%$). No other significant differences in diversity variables existed between the two samples. Participants in the two samples were then coded into two groups: those who participated in mentoring ($n=49, 54\%$) and those who did not ($n=40, 44\%$).

<table>
<thead>
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<th>Variable</th>
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<tr>
<td>Personal Diversity</td>
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<tr>
<td>Professional Diversity</td>
<td>.37</td>
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<tr>
<td>Reactions to Diversity</td>
<td>.03</td>
</tr>
<tr>
<td>Prior Diverse Experiences</td>
<td>9.72***</td>
</tr>
</tbody>
</table>

*Notes. * $p < .05$. ** $p < .01$. *** $p < .001$
Paired Samples t Tests

Then paired sample t-tests were conducted for each sample to compare differences in students’ diversity beliefs on each variable from the beginning to the end of the semester. Complete results can be seen in Table 3.

Table 3
Results from Paired Samples t Tests Comparing Mentoring and Non-Mentoring Students

<table>
<thead>
<tr>
<th>Sample 1</th>
<th>t</th>
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<td>Personal Diversity</td>
<td>.30</td>
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<tr>
<td>Professional Diversity</td>
<td>.11</td>
</tr>
<tr>
<td>Reactions to Diversity</td>
<td>.01</td>
</tr>
<tr>
<td>Prior Diverse Experiences</td>
<td>.59</td>
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<tr>
<td>Sample 2</td>
<td></td>
</tr>
<tr>
<td>Personal Diversity</td>
<td>.01</td>
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<tr>
<td>Professional Diversity</td>
<td>1.52</td>
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<tr>
<td>Reactions to Diversity</td>
<td>5.24*</td>
</tr>
<tr>
<td>Prior Diverse Experiences</td>
<td>.04</td>
</tr>
</tbody>
</table>

Notes. * p < .05. ** p < .01. *** p < .001

Paired t tests from Sample 1 revealed no significant differences between students’ diversity beliefs for those participating and not participating in the mentoring experience. These results offer that students who reported prior diverse experiences did not report any significant changes in their awareness of diversity after mentoring students from a diverse student population.

To the contrary, results from Sample 2, revealed a significant difference in students’ Reactions to Diversity for those who participated in mentoring \((t(41)=5.24, p<.05)\). No other scales revealed a significant difference from the two semesters, as a result of the mentoring experience. See Table 2 for results from the independent samples t tests.

Students in Sample 1 revealed no significantly different changes in students’ diversity beliefs resulting from the mentoring experience; however, the students in Sample 1 reported much higher scores in their diversity experiences. Perhaps the students in Sample 1 had already had such diverse experiences that participating in the mentoring experience did not impact their beliefs. Students in Sample 2 that
participated in the mentoring experience reported a greater change in their reactions to diversity than those who did not participate in mentoring. These results suggest that by participating in the mentoring experience, students adopted a belief that incorporating culturally diverse texts and materials into their classrooms is important for the education of all students. Neither sample reported any changes in their personal and professional beliefs, indicating that their beliefs about people from diverse background were not affected by mentoring.

**DISCUSSION**

The purpose of the current study was to understand whether teacher education candidates with little prior experience with diverse populations showed an increase in their awareness of diversity following a mentoring experience. Results suggest that the mentoring experience over the course of a semester was beneficial to students’ increase in their awareness of diversity. In other words, providing teacher preparation candidates, who have little prior experience with diverse populations, with an opportunity to work with students different from them improves students’ awareness of diversity. According to Blackwell, Trzesniewski, and Dweck (2007), teachers who address the needs of every student, who develop the curriculum to meet the needs of every subgroup, will not only be effective but will align his or her approach to the current educational polices, such as No Child Left Behind.

However, some limitations of the study should be addressed. One limitation of the study resulted from the small sample size. Though data was gathered over two semesters, the samples were only from two classes. Additional research should be conducted with larger samples to minimize group differences. In addition, the current research utilized self-report survey. Researchers may consider interviews to better understand students’ diverse experiences, beliefs, and reactions to them.

The current study suggests that students choosing to participating in a mentoring experience at a culturally diverse middle school benefitted by gaining a greater appreciation for the incorporation of various cultures and traditions into their future classrooms. Similar to Klug et al. (2006), not all teacher
education majors may change their beliefs about diversity during a single mentoring experience. However, through various cultural experiences presented to teacher education majors throughout their coursework, these students may begin to gain a greater understanding of the value and importance of incorporating diversity into their classrooms.

This study had mixed results based on the student’s prior experiences with diverse students. This study’s participants did not indicate that they had developed a sense of comfort. Research suggests that when people cross borders and engage in cross-cultural encounters, they often discover valuable things they had not anticipated (Grant and Gomez, 2001). The participants in this study did not indicate that they had made such a discovery. This study provided the same results.

The National Council for the Accreditation of Teacher Education, NACATE (2000) highlighted through its standards the importance and value of field-based experiences with culturally diverse populations. As our nation continues to change, new challenges and demands to understand, appreciate, and affirm diversity will arise. Although many teacher preparation programs prepare pre-service teachers for the classroom with multiple field experiences, teacher preparation programs in Texas should consider the importance of providing pre-service teachers with an opportunity to participate in diverse experiences as well.
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Reflections of Pre-service Teachers: 
An Analysis of Peer Practice Teaching Video

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INTRODUCTION

This pilot study examined pre-service teachers’ developing pedagogical knowledge via observation and analysis of guided self-assessment of a video-recorded peer practice teaching session. A plethora of research supports the practice of pre-service teachers gaining experience through fieldwork in partnerships with experienced teachers in professional development schools (Goodlad, 1991; Teitel, 2004; The Holmes Group, 1995). Since this experience is vital to the training and development of new teachers, it is crucial that they get the feedback and practice necessary for their professional development. However, finding adequate numbers of experienced master teachers to serve as mentors to provide vital feedback and meaningful guidance for every pre-service teacher can be challenging. Another challenge, especially for smaller teacher education programs, is providing opportunities for content specific pedagogy courses that focus on best practice development in specific content areas. Research shows that teaching pedagogy in conjunction with the content is a much more effective approach in teacher education than instruction focused on content and pedagogy in isolation (Shulman, 1986). Therefore video capture and analysis, as a way to supplement pre-service teacher training, is a promising tool for allowing a more focused, individualized, content specific analysis resulting in the development of classroom management and pedagogical content design and decision making skills (Author, 2012). Additionally, research on the use of video to support pre-service teacher learning indicates that it can be very useful in identifying areas where students lack basic knowledge and teaching skills (Castro, Kelly, &
Shih, 2010; Le Maistre & Pare, 2010; Sherin & Van Es, 2005). The literature review in the next section focuses on video capture and analysis in pre-service teacher learning and developing pedagogical content knowledge (PCK).

**LITERATURE REVIEW**

**Pedagogical Content Knowledge (PCK)**

Seminal work conducted by Shulman (1986) made significant advancements in the design of teacher education programs by demonstrating the importance of providing instruction and training for pre-service teachers where pedagogy and content are not taught in isolation but are taught together and are held in equal importance. Prior to his work, pedagogy and content were typically considered separate entities. He asserted that teachers’ subject knowledge and content pedagogy were being treated as mutually exclusive domains, which was not the most beneficial way for teachers to develop and advance what he eventually termed as pedagogical content knowledge (PCK) (Koehler, 2011; Shulman, 1986).

Possessing PCK requires that teachers be knowledgeable in their respective content areas but also requires that teachers possess knowledge of content specific strategies strategy knowledge in order to make pedagogical decisions based on what best helps students learn a given concept. Pedagogical content knowledge (PCK) is different from the general pedagogical knowledge that all teachers share and is also different from the content knowledge of a disciplinary expert. PCK entails teacher understanding of how elements of the content can be sequenced for better student understanding and is also concerned with how concepts are arranged, the difficulty level of concepts, students’ prior knowledge, and the variety of techniques any given teacher has available to address learner needs and differences (Koehler, 2011). As noted in the next section, observation and analysis of teaching video holds promise for pre-service teachers.
Video Analysis and Reflection

Video analysis and reflection holds real potential for supporting pre-service teacher learning, assisting in both identifying problems encountered in the classroom as well as aiding in generating possible solutions. In using video technology as a tool for supporting pre-service teacher learning and development, the research suggests several key features, one of which is a question guide that fosters development of pre-service teacher higher order cognitive and metacognitive thinking in pedagogical problem solving and decision making (Ge & Land, 2004; Rich & Hannafin, 2009; Shaw, Barry, & Mahlios, 2008; van Es & Sherin, 2006). Although the problem solving processes of pre-service teachers are not an emphasis of this study, the processes do provide insight on the ability to identify weaknesses, which is crucial to the subsequent growth of skills and conceptual knowledge. Furnishing explicit prompts for video analysis provides necessary guidance in assisting pre-service teachers to identify teaching strengths and weaknesses that ideally result in generating meaningful reflections and interpretations (Rich & Hannafin, 2009). The prompts serve as a filter in assisting them to focus in on specific issues. Ge and Land (2004) recommend prompts useful in scaffolding cognitive and metacognitive skills, which would help in accessing and applying applicable pedagogical content knowledge, developing solutions to problems, and cultivating a self-monitoring process to assess the effectiveness of those solutions. While there is a wealth of research on the various uses of video cases in teacher education programs, the impact on pre-service teacher learning outcomes is not well examined because many of the studies have focused on the attitude and feelings of pre-service teachers and how they make sense of watching the practice of expert teachers (Barnett, 2006; Colestock & Sherin, 2009). This indicates the need for a study such as this one, which focused on how pre-service teachers made sense of guided video reflection of their own teaching. The next section describes the design of the study.
METHODS

The purpose of this pilot study was to examine how and to what extent guided video self-assessment conducted very early on in a small teacher education program at a Midwestern university helped the pre-service teachers in building pedagogical content knowledge and awareness of their craft. Our aim was to provide sufficient scaffolding to help pre-service teachers with little or no teaching experience begin to develop skills to effectively analyze, observe, and reflect on their own practice (Author, 2012; Nilsson, 2008). It was necessary to supply structured questions that prompted the pre-service teachers to build cognitive and metacognitive skills that could lead to meaningful interpretations of their teaching practice as captured in their peer practice video (Ge & Land, 2004). The peer practice video and pre-service teacher responses to the guided reflection questions provided the data for analysis.

A constant comparative method of analytic coding (Miles, Huberman, & Saldana, 2014, p. 285) was used to categorize pre-service teacher reflections and analysis of their peer practice lesson. The pre-service teachers were asked to engage in guided reflection on their practice at the midpoint of the semester and again at the end of the semester. This method allowed the researchers to categorize specific themes that emerged from the coding of the digital texts and video into more general teaching categories. Of particular importance was documenting changes in teaching practice throughout the semester that occurred as a result of watching themselves teach to their peers.

Data Collection

Fourteen secondary teacher education students enrolled in a required planning and assessment course participated in this study. Two students were post-baccalaureate and seeking their teaching certification and the remainder were undergraduates enrolled in the secondary education program. The university Human Subjects Review Board approved the study and all students in the course signed an informed consent.
Each student prepared and delivered a 30-minute lesson in their content area to their peers as part of their normal classroom assignments. For the purposes of this study, the lessons were video-recorded and copies were given to the students along with two sets of reflection questions that helped guide their thinking about their teaching.

The initial six-question reflection guide, given at mid-term, focused on basic teaching principles such as making learning objectives clear to the students, identifying their teaching strategy choices as teacher-centered or student-centered, and recognizing the types of assessment that were employed. These questions were designed to prompt learners to build cognitive skills by drawing upon their own knowledge and experience. The students were asked to mark times in their teaching video clips that provided evidence of their explanations. For example, one student wrote, “These [learning] objectives were somewhat displayed in video [clip] one at 18 seconds and in video [clip] three at the start.”

The second reflection guide was given at the end of the semester and was designed to help students build metacognitive skills such as building mental schema that organize and interpret what is happening as they view their teaching video (Chi & Glaser, 1983; Ge & Land, 2004). By the end of the semester, in addition to teaching their peer practice lesson, the pre-service teachers had taught three lessons in a high school classroom and had received feedback through formal observations from their instructor and the mentor classroom teacher. They were then prepared to revisit their peer practice teaching video and answer the final set of six reflection questions. This set of questions focused the pre-service teachers on analyzing, organizing, and describing how they identified teaching skills that need improvement, defining student-centered teaching strategies, defining and recognizing formal and informal assessment practices, making connections between classroom management and teaching strategies, and articulating how self and peer reflection using video might help them grow as teachers.
Analysis

All mid-term reflection documents and all final reflection documents written by the pre-service teacher participants were analyzed using Atlas.ti™, a qualitative research software program. The researchers did five rounds of grounded coding to generate 22 codes from 160 text chunks drawn from the midterm and final reflection documents. The researchers used qualitative factor analysis (Miles et al., 2014) to develop three main categories with related subcategories.

Table 1
Coding Categories

<table>
<thead>
<tr>
<th>Main Category</th>
<th>Subcategories</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pedagogical Content Knowledge</td>
<td>Issues, student centered, teacher centered, teaching strategies, change in teaching strategies</td>
</tr>
<tr>
<td>Assessment</td>
<td>Classroom management, formal assessment, formal assessment used, informal assessment, informal assessment used, assessment change, and assessment issues</td>
</tr>
<tr>
<td>Video Reflection/Analysis</td>
<td>Helped identify weak teaching practice, feelings about seeing oneself teach, and responses to engaging in peer/expert feedback</td>
</tr>
</tbody>
</table>

Pedagogical Content Knowledge (PCK) emerged as a main category because the pre-service teacher reflections on their teaching strategies featured their teaching strategies, changes in teaching strategies, how to be more student-centered, and creating useful and accurate learning objectives. For example, a pre-service science teacher found she had not helped her learners understand that the learning objectives were to learn the parts and the functions of the parts of several categories of plants. They memorized the parts and not the functions. Her learners could not complete the worksheet she created for them as a result, and she wrote in detail about this in her reflection.

Assessment emerged as a main category because of the common experiences of the pre-service teachers as they discovered they did not plan assessment they could actually use, or their assessment plan...
did not work because it was not well aligned with the learning objectives or activities. One pre-service teacher noted, “My understanding of formal assessment is that it is a scheduled and structured product, whether a test, a portfolio, a project, a homework assignment, or even a formal interview with the specific questions for evaluating the student’s understanding.” This definition seems clear and to the point. However, when asked what types of formal assessments they used, a typical response was they handed out a worksheet.

In terms of assessing themselves rather than their teaching, the video reflections revealed common experiences that ranged between dismay about physical habits such as talking with one’s hands and seeing oneself through “new eyes” that seemed to create a realization that peer and expert review on a regular basis could be very beneficial to developing their practice.

The pre-service teachers were generally astute, if not accurate, in identifying their problems with PCK, assessment, and professional development. They frequently misdiagnosed issues with their learning objectives and did not always recognize formative assessment when they were doing it. In the next section we discuss the results of the analysis.

**RESULTS**

Collins, Brown, and Holum (1991) argued that too little attention is paid to “the organizing principles of expertise” and “the integration of cognitive strategies” (p. 2) used by experts to accomplish tasks. In the context of this study, the focus was on the process of how pre-service teachers build expertise, in light of their observations and beliefs about their own teaching. This study employed a video reflection strategy to examine the nascent cognitive and metacognitive development of the pre-service teachers in this study. The purpose was to better understand the choices they made in their teaching and assessment strategies and to look for evidence of the integration of cognitive strategies and self-monitoring strategies that could indicate development of metacognition. This evidence guided the
researchers in making course redesign decisions as well as indicating needed changes in teaching strategies.

The analysis of the reflection guides at mid-term and at the end of the semester revealed that the pre-service teachers had made important changes to their teaching strategies and assessment plans as a result of watching their peer practice videos. The analysis also indicated areas where the pre-service teachers needed more structure to help them develop their skills and conceptual knowledge. The following sections describe the findings organized in the three major categories that emerged from the analysis.

PCK

The comparison between the mid-term and end-term reflections indicated that the pre-service teachers agreed that they needed to become more student-centered in their teaching, but they had a wide range of ideas on how to achieve this. Brush and Saye (2000) wrote that student centered learning environments are designed to give students an active role in their learning by allowing them to study problems through developing their own strategies, doing research for resources, and finding answers in a collaborative learning space. Hannafinn, Land, and Oliver (1999) and Brush (1998) argued that there is a growing body of evidence that student-centered learning environments promote higher order thinking. However, students often end up frustrated and do not complete these projects because there is not enough structure to guide them effectively through to completion. The PCK analysis illustrated that the pre-service teachers in this study have general ideas about student-centered learning but not much grasp on specific structures to support students successfully through an entire project. Figure 1 illustrates their main ideas about student-centered learning.
It is interesting to note that the pre-service teachers listed what students \textit{should} do and what teachers \textit{should not} do. They did not provide detail on what the teacher should do or what students should not do.

\section*{Assessment}

Black and Wiliam (1998) wrote that assessment is any activity that allows teachers and students to get information that informs teaching and learning. Although there have been many new forms of assessment emerging in recent times, formative and summative assessment are standard practices used by many educators. Formative assessment usually happens during instruction, and if necessary, it may be used to help teachers change the course of their instruction “on the fly” to accommodate student learning needs. Summative assessment is usually the final grade at the end of a chapter, unit, or other learning experience (Boston, 2002; Freiberg & Driscoll, 2005). The analysis highlighted the pre-service teachers’ focus on whether students could remember facts at the end of the lesson, and most did not check for understanding of concepts or ideas. In terms of change from mid-term to end-of-term, the majority of pre-
service teachers reflected that they had changed their assessment strategies so they began assessing throughout the lesson rather than only at the end. Additionally, they began using checklists to make sure they assessed individual student work, even if the students were working in a group. Several also mentioned that they were more formally dividing up the workload for group work to make sure all students were participating. The graphic organizer in Figure 2 illustrates the findings in the assessment category.

<table>
<thead>
<tr>
<th>Assessments</th>
<th>What they say it is</th>
<th>What they did</th>
<th>Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formal</td>
<td>Tests and quizzes</td>
<td>Creating</td>
<td>Managing groups/assessing individual members</td>
</tr>
<tr>
<td></td>
<td>Measures comprehension</td>
<td>Answer questions correctly</td>
<td>Assess throughout lesson</td>
</tr>
<tr>
<td></td>
<td>Concrete</td>
<td></td>
<td>Enough activities to assess</td>
</tr>
<tr>
<td></td>
<td>Worksheets</td>
<td>Worksheets</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Creating</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Informal</td>
<td>Played games</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Worksheets</td>
<td>Discussion</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Games</td>
<td>Group activities</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Checklists</td>
<td>Observation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Observation</td>
<td>Asking questions</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Creating</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Figure 2.** Assessment Findings

There is a small but important gap between how the pre-service teachers defined formal assessment and what they actually did in the classroom. For example, note that formal assessment is defined as tests and quizzes, measures comprehension, and includes worksheets and creating things. They described their formal assessments as worksheets, answering questions correctly, and creating things. There is no mention of measuring comprehension or for conceptual understanding. There is little difference between the definition of informal assessment and what the pre-service teachers actually did in
class. Again, the pre-service teachers focused on helping students remember facts in the lesson and did not spend time helping them develop conceptual or higher order thinking about the learning objectives.

**Video Reflection**

Shulman (1986) wrote that the transition from expert learner to novice teacher is a difficult process. Bransford, Brown, and Cocking (2002) explained, “People often need help in order to use relevant knowledge they have acquired, and they usually need feedback and reflection…” (p. 203). Research on pre-service teacher reflection shows that video cases can be a positive learning experience and can help promote higher order thinking that will help new teachers make this transition. Video supports reflection and helps pre-service teachers focus on pedagogical issues as well as classroom management (Rosaen, Lundeberg, Cooper, Fritzen, & Terpstra, 2008). The graphic organizer in Figure 3 illustrates three main areas of reflection that emerged from the coding process. These key areas are pedagogy, self-assessment, and professional development.

![Video Reflections](image)

**Figure 3. Video Reflection Findings**
In the pedagogy category, the pre-service teachers came to realizations that they were attempting to cover too much ground and needed better preparation for teaching. In the self-assessment category, the main headings were the importance of seeing yourself teach rather than having someone describe it to you, and the act of seeing oneself as a teacher for the first time. In the professional development category, the pre-service teachers became aware of how important peer and self-assessment can be in developing professional skills.

DISCUSSION

The purpose of this study was to examine to what extent guided video self-assessment can help pre-service teachers develop their teaching skills. The research literature on video case studies for teacher learning demonstrates that with the proper scaffolding, new teachers tend to reflect more thoughtfully when studying video cases. In this study the focus centered on how very new pre-service teachers articulated their thinking about what it means to teach through watching themselves. Placing oneself as a teacher at the intersections of PCK, assessment, and professional development is a complex process, and this study indicates it is possible to begin the habit of self and peer reflection/assessment very early in the teacher education program with good results.

Our findings indicate that this group of pre-service teachers realized they needed to move from teacher-centered practice to student-centered learning, and the peer practice video gave them the opportunity to reflect upon what this means and how they might begin changing their planning to achieve it. At this point in their careers their PCK focus was on what the students should do and what the teacher should not do. Their assessment concerns included learning to assess informally and formally throughout their teaching, and their reflections ranged from their concern about physical habits and appearance to realizations that the video gave them insights into their practice that are not possible with traditional methods. It is clear they need to practice aligning their learning objectives with their activities and
assessments and to think more critically about how to help students connect facts and concepts with their own lives.

As with any pilot study there are limitations inherent in the process. The reflexive nature of qualitative research requires multiple cycles of analysis to determine the trustworthiness of the findings (Creswell, 2013; Maxwell, 2013). It is believed that this type of study best lends itself to a longitudinal design in which future cycles video analysis from future classes of students will provide a deeper, richer data pool for a more robust analysis. In future iterations of the study it will also be necessary to account for baseline levels of teaching expertise or for any type of teaching experience prior to the course no matter how nominal. For instance, some students may have volunteered at a youth camp, taught Sunday school or substituted at a school district, and those considerations were not accounted for during coding or analysis.

As a result of this analysis, next steps include capturing both the peer practice lesson as well as the final in-classroom lesson on video so the students may do a comparison between the two moments in time. Mentor teachers will be invited to join in this process through the use Voicethread, a video annotation tool. This tool allows synchronous and asynchronous discussion and analysis of pre-service teacher video. Video of master teachers will be provided as well, and a community discussion that includes mentor teachers, pre-service teachers, and university faculty will take place in Voicethread. Guided analysis will take place so that pre-service teachers may compare their own teaching to that of the master teachers. The next round of this study will include secondary and elementary pre-service teachers, and the analysis will include the video as well as reflection text. These practical steps should provide the proper structure and guidance for the pre-service teachers to build cognitive and metacognitive skills that lead to meaningful interpretations of their teaching practice.
REFERENCES


RETHINKING BILINGUAL TEACHER EDUCATION IN A US-MEXICO BORDER COMMUNITY

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Abstract

This paper outlines the efforts of the bilingual education faculty of the college of education at a south Texas university to improve their bilingual pre-service teacher education program. The authors discuss the context of their institution and the characteristics of their bilingual teacher candidates. The program review discussed aimed at preparing pre-service bilingual teachers with the knowledge and pedagogical skills needed to teach all students and providing opportunities to further develop their linguistic proficiency in Spanish to better serve emergent bilinguals in their primary language. The authors suggest that bilingual teacher education programs require bilingual and biliterate teacher educators who can address the content and linguistic needs of their pre-service bilingual teachers. They recognize that bilingual program faculty must understand the Spanish proficiency level of their bilingual teacher candidates in order to develop coursework around their needs and infuse language development across coursework. The authors recommend the implementation of border pedagogy to enhance cultural and linguistic pride in their bilingual teacher candidates, help them become agents of change and advocates for their students, and demonstrate high levels of professionalism.

INTRODUCTION

In the last ten years in the United States the importance of effective teaching has been at the center of the political debates. Teacher education and the yearly performances of both teachers and students have been at the core of the discussion (Loewenberg Ball & Forzani, 2009). In this time of accountability, teachers are expected to be prepared with an array of knowledge and skills to serve the increasingly diverse student population they teach in schools across the nation (Darling-Hammond, 2006).
So the question remains, how do institutions of higher education adapt or change to better equip pre-service teachers with the knowledge and skills required of a 21st century schooling? This type of teacher education requires a deep understanding of teaching strategies and approaches, of diverse student populations, and of the content they are expected to teach. While this is a difficult undertaking for all pre-service teachers, it is even more so for those who are seeking their bilingual certification. In addition to passing the pedagogy and content exams, bilingual teacher candidates must be both bilingual and biliterate to pass the language exam.

This paper outlines the efforts of the bilingual education faculty of the college of education at a south Texas university to improve their bilingual pre-service teacher education program. In the following sections we outline the context of our institution. We also describe the uniqueness of the students that attend our teacher education program and the factors that affect their successes or failure focusing on the advantages and disadvantages they have. Next, we discuss the challenges we encounter in the preparation of our bilingual teacher candidates based on the accountability of teacher education in Texas and how we addressed those challenges.

**OUR CONTEXT**

The University of Texas at Brownsville is located on the Texas-Mexico border, and serves a majority of Latino/a students of Mexican descent (96%). According to the University of Texas at Brownsville Incoming Students Report (2011), approximately 78% of undergraduates are first-generation college students. In addition, 92% of them identify themselves as bilingual, 75.65% of freshmen students indicated they were enrolled part time because they needed to work, and 88.76% reported to have financial needs and received some kind of financial aid.

Research shows that there are several factors affecting Latino/a students’ success. According to Gándara and Contreras (2009) most Latino/a students grow up living in poverty; they come from a home where the primary language is not English; they have parents who have low levels of educational
attainment; most of them have limited social and educational capital; and they show the effects of academic disengagement due to poor educational experiences in the schools they attended. These general observations about Latinos/as’ educational attainment and experiences in U.S. schools have profound implications in our context. Students from the lower Rio Grande Valley are at significantly higher risk of all these factors than students from other areas of the country (Wells, 2012). Nevertheless, it is important to note that our bilingual teacher education program has capitalized on several advantages particular to the area where our institution is located, but at the same time, has faced and continues to face several challenges that make our program reform even more important and needed.

Teacher education faculty at our institution embraced the opportunity to capitalize on the linguistic resources of the area. Our students have different degrees of bilingualism. Some are fluent bilinguals and many come from across the border which creates a very diverse and rich linguistic landscape. For all our students, bilingualism is part of their daily life inside and outside school. All of them have demonstrated high pride in their culture through high level of involvement in different cultural aspects of student life at the university. In addition, the mission of the university values diversity and bilingualism.

On the other hand, one of the challenges of working with our unique student population in our context is that many students could still be considered to have some characteristics of second language learners. For example, immigrants who come to study in the US as well as those who come across the border every day to attend classes have varying degrees of English proficiency. Conversely, many of the students educated in English in U.S. schools have developed low literacy skills in English and limited to no literacy skills in Spanish presenting the characteristics of what several researchers call long-term English learners (Olsen, 2010; Freeman, Freeman and Mercuri, 2002; Menken & Kleyn, 2011). In addition, Texas teacher certification standards have increased, a topic that will be discussed in the following section.
THE PROBLEM

The Accountability Challenge

While our context presents some advantages as well as challenges for the preparation of pre-service bilingual teachers, teacher education programs in the state of Texas are also confronted with an increasingly challenging accountability system for teacher candidates. Furthermore, certification exams in Texas changed from EC-4 to EC-6. The state phased out previous bilingual and supplemental EC-4 and 4-8 exams and now offers the Bilingual Education Supplemental Exam (164) and the EC-6 Bilingual Generalist Exam (192). Moreover, the Texas Oral Proficiency Test (TOPT) was replaced by the Bilingual Target Language Proficiency Test (BTLPT), which not only assesses oral proficiency in Spanish, but reading and writing proficiency as well. This makes the passing of the new exams a hurdle for pre-service teachers who are faced not only with a high academic content test but also with a highly demanding Spanish test. These factors put our bilingual teacher candidates at a greater disadvantage in comparison with their English-speaking peers.

Low levels of Spanish Proficiency

Due to the lack of opportunities to develop Spanish academic proficiency during their school years, bilingual teacher candidates are at a disadvantage in comparison with their English peers who have received 12 years of instruction in English and continue to develop and refine their skills. Teachers in bilingual classrooms need to have high levels of academic Spanish in order to teach language through the content areas. However, most bilingual teacher candidates are part of the vicious cycle of subtractive schooling. Valenzuela (2009) explains that “schools subtract… students’ culture and language” (p. 336). This is the result of an educational system that values and perpetuates only English monolingualism (Guerrero & Guerrero, 2009; Guerrero, 1997).

With the accountability standards imposed by NCLB and the new Texas certification demands, a “highly qualified” status is determined by the results of standardized tests. With this in mind, we looked...
for solutions to improve our bilingual teacher education program focusing on the areas in which effort and support was most needed, in our case, pedagogical approaches to teach biliteracy and content to emergent bilinguals in Spanish (García, Kleifgen & Falchi, 2008).

RELATED RESEARCH

Research on Teacher Education

We began our efforts by looking at existing research and best practices in teacher education in general, and more specifically, in bilingual teacher education. The field of research on teacher education is fairly new, and existing studies have yielded mixed results (Cochran-Smith & Zeichner, 2005). Many studies in teacher education are conducted by individual researchers in their own courses and investigate the effectiveness of their own practice. Nevertheless, a review of existing research studies conducted by a panel from the American Educational Research Association (AERA) provided a comprehensive overview of empirical bases for teacher education (Cochran-Smith & Zeichner, 2005). Among their findings, the panel acknowledged that one of the major challenges that teacher education programs face is preparing pre-service teachers to teach an increasingly diverse student population (Cochran-Smith & Zeichner, 2005; Darling-Hammond, 2006). Therefore, teacher education programs must help pre-service teachers address the needs of Latino/a English language learners (Capella-Santana, 2003).

The National Academy of Education Committee on Teacher Education has identified three aspects that teacher education programs must address to prepare pre-service teachers for a “changing world” (Darling-Hammond, 2006, p.5). Those aspects are knowledge of the students (including language development), knowledge of content and curriculum goals, and knowledge of pedagogy (including how to teach diverse learners) (Darling-Hammond, 2006). In addition, three key pedagogical features were highlighted for teacher education: coherence and integration, clinical experiences, and new relationships with schools. Of special importance to us were the aspects of coherence and integration: First, teacher educators collaborate by planning together and sharing syllabi. Second, courses combine the teaching of
content with pedagogy. Third, most of the coursework requires some form of field experience in classrooms (Darling-Hammond, 2006).

Even though effective practices have been identified, many teacher educators are faced with the challenge of teaching a state mandated curriculum (Guerrero & Farruggio, 2012). This is due to the great impact of state and local policies on teacher education. Despite accountability being a major influential force in teacher education programs, there is a very limited number of research studies in this area of teacher education (Cochran-Smith & Zeichner, 2005). Studies on pre-service teachers of color reveal that they are less academically prepared than their white counterparts, and face challenges both when seeking admittance into a teacher education program and when they enter the teaching profession (Cochran-Smith & Zeichner, 2005). Zhang and Telese (2012) conducted a study to examine the relationship between the academic characteristics of Latino/a pre-service teachers and their performance on the Pedagogy and Professional Responsibilities (PPR) TExES exam. They found that there is a relationship between reading ability, critical thinking, and performance on the PPR TExES exam. Therefore, they suggest that teacher education programs serving teacher candidates whose first language is other than English provide them with opportunities to “read and analyze teaching cases” and develop content and pedagogy vocabulary (p. 399).

Research on Bilingual Teacher Education

Inasmuch as familiarity with the academic vocabulary of teaching and learning may be important for teacher candidates to perform satisfactorily on their certification exams, bilingual teacher candidates also need academic language in Spanish to effectively impart bilingual instruction, but not all of them have developed the required levels of Spanish proficiency. Just as not all Latinos/as fit the same cultural mold (Flores, Clark, Guerra, & Sánchez, 2008), not all pre-service bilingual teachers share the same background or characteristics. Their academic and socioeconomic background, as well as their national origin, determines the opportunities they had to develop academic Spanish proficiency. As previously
explained, Latinos/as who are born and raised in the United States have fewer opportunities to develop academic Spanish proficiency than those who received schooling in Spanish-speaking countries (Guerrero, 2003). Teacher education programs must validate the linguistic backgrounds of prospective bilingual teachers even when they do not speak standard Spanish (Ek & Sánchez, n.d.).

“Schools are a reflection of the larger society” (Flores et al., 2008, p.302), and when teacher education candidates are not members of the dominant group, their self-esteem may be hindered. Teacher education programs can help teacher candidates develop a strong ethnic and cultural identity, understand their students’ cultures and ethnicities, and build their confidence in their ability to teach all students (Clark & Flores, 2001; Flores et al., 2008). The development of cultural identity influences teacher candidates’ identity development as teachers (Clark & Flores, 2001). It is important for teachers on the borderlands to develop a strong teacher identity that can enable them to support their students to develop their cultures and languages in a caring environment (Romo & Chavez, 2006). Unfortunately, teacher education programs generally do not prepare teacher candidates to address the cultural and linguistic needs of children in the borderlands (Cline & Necochea, 2006).

**BORDER PEDAGOGY**

Students from the United States and Mexico come into contact on a daily basis in the borderlands, and teachers must be prepared to deal with the complex cultural, linguistic, and social context of the area (Cline & Necochea, 2006). Cline and Necochea (2003) propose a model for border pedagogies in which they include curriculum, instructional practices, and knowledge base. The curriculum in their model should reflect the cultures and languages of the students with a goal of promoting bilingualism and biculturalism. The instructional practices should capitalize on the strengths and characteristics of the students promoting collaboration, social interaction, as well as visual and hands-on engagement in learning. Teachers in the borderlands should have a strong knowledge base of the complex history, culture, and language of students in the area. Likewise, Romo and Chavez (2006) claim that border
Pedagogy teachers must tailor the curriculum to students’ lives, use alternative resources that are aligned to students’ identities, and promote the application of learning to students’ experiences. They add that students in the borderlands benefit from “a learning environment that encourages positive social interaction, active engagement in learning, and self-motivation” (p. 152).

Guerrero and Farruggio (2012) draw from Shulman’s signature pedagogies to propose a signature border pedagogy for Latino/a pre-service teachers in the south Texas borderlands. Shulman (2005) explains that signature pedagogies include a “surface structure” consisting of specific “acts of teaching and learning,” a “deep structure” composed of “assumptions on how best to impart a certain body of knowledge,” and an “implicit structure” comprising a “set of beliefs about professional attitudes, values, and dispositions” (pp. 54-55). Guerrero and Farruggio (2012) propose that teacher educators must know and understand their students in order to align curriculum to their needs, cooperate with fellow teacher educators in the development of syllabi, group students in cohorts or teams to facilitate student success, and develop caring relationships with teacher candidates. Moreover, they stress the importance of helping teacher candidates develop “ideological clarity” in understanding that their low academic achievement is not a result of their cultural or bilingual identity (p. 564). They argue that a signature border pedagogy is needed for pre-service teachers who struggle with academic texts in English and are expected to deliver instruction using academic Spanish (Guerrero & Farrugio, 2012).

A CLOSER LOOK AT OUR UNDERGRADUATE POPULATION

Our Vision

Taking into consideration the characteristics of our Latino/a bilingual teacher candidates and the border context in which they are developing their teacher identities, we developed a vision for the type of bilingual teachers we want to graduate. First, we envisioned producing high-quality bilingual educators by providing our pre-service teachers with opportunities to develop high levels of academic proficiency in both Spanish and English for teaching and learning. Second, we want our teacher education program to
facilitate opportunities for pre-service bilingual teachers to become bilingual and biliterate. Third, we want our pre-service teachers to view themselves as advocates and agents of change for younger generations of second language learners.

**Our Approach**

Our efforts moving forward with our vision have begun by hiring bilingual and biliterate teacher educators who can support the bilingual and biliteracy development of our bilingual teacher candidates. This has allowed for a seamless connection between bilingual teacher educators, bilingual teacher candidates, and K-12 English language learners (ELLs). As bilingual teacher educators, we have promoted the development of bilingualism and biliteracy by integrating the teaching of content and the teaching of language across coursework. Bilingual education majors take 9 credit hours of education courses taught in Spanish. Through these courses bilingual teacher candidates learn theory and best practice in bilingual education while receiving additional support in the development of academic Spanish for teaching and learning. Table 1 shows the courses that students take in Spanish in the College of Education.

<table>
<thead>
<tr>
<th>Course Prefix</th>
<th>Course Name</th>
<th>Credit Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>BILS 3310</td>
<td>Emergent literacy in the bilingual classroom</td>
<td>3 credit hours</td>
</tr>
<tr>
<td>BILS 3312</td>
<td>Teaching reading and writing in the bilingual classroom</td>
<td>3 credit hours</td>
</tr>
<tr>
<td>BILS 4306</td>
<td>Content area methods in the bilingual classroom</td>
<td>3 credit hours</td>
</tr>
</tbody>
</table>

Hiring bilingual and biliterate faculty has given us the opportunity to address the content and language needs of our students, a concept similar to the combining of content and pedagogy as advocated by Darling-Hammond (2006).
In fact, Darling-Hammonds’ recommendation is implemented in our bilingual teacher education program. Bilingual teacher candidates take 6 credit hours of coursework in which content and pedagogy are integrated. They are required to take one course of methods in teaching mathematics and science, and one course of methods of teaching elementary social studies and English language arts. These two courses are taught in English, which allows bilingual candidates to become more familiar with English academic vocabulary needed for teaching and learning as recommended by Zhang and Telese (2012).

As was previously mentioned, the levels of Spanish language proficiency of our bilingual teacher candidates range significantly. We have bilingual pre-service teachers who are competent academically in Spanish because they received most of their education in Mexico or other countries where Spanish is the dominant language. On the other hand, we have those bilingual teacher candidates who have only managed to keep conversational skills in Spanish due to the subtractive nature of education that they have received in the United States, which emphasizes English monolingualism. The same range applies to their levels of English proficiency. Therefore, an important goal of our bilingual education program is to provide bilingual pre-service teachers with opportunities to become competent bilinguals and develop biliteracy. Besides the coursework taught in Spanish in the college of education, bilingual majors take 12 credit hours of courses in Spanish from the Modern Languages Department: two courses in Spanish language, one course in acquisition of Spanish language, and one course in children’s literature in Spanish. The rest of their coursework is taken in English. Bilingual candidates are required to take 6 credit hours of coursework from the English Department. They take 3 credit hours of English grammar, and 3 credit hours of introduction to descriptive Linguistics. This combination of coursework in English and Spanish provides the much needed opportunity for our bilingual teacher candidates to develop bilingualism and biliteracy.

Our third goal for bilingual pre-service teachers in our program is to help them become advocates for English language learners and agents of change for younger generations of children in our border
community. Therefore, we have incorporated aspects of border pedagogies into our instruction in an effort to be responsive to our teacher candidates’ identities, cultures and realities and help them develop strong teacher identities that will enable them to support and address the needs of children in the borderlands in a meaningful way (Cline & Necochea, 2003; Romo & Chavez, 2006). For example, the bilingual education faculty understands teacher candidates’ backgrounds well. They are familiar with their culture and establish trust. In addition, faculty members in our bilingual teacher education program are in constant communication with one another. Regular meetings are held to discuss student performance and course content. In fact, bilingual faculty create syllabi, plan courses, and review assessment results collaboratively as suggested by Darling-Hammond (2006) and Guerrero and Farruggio (2012).

As was previously explained, teacher education programs are subject to state mandates (Cochran-Smith & Zeichner, 2005; Guerrero & Farruggio, 2012). Bilingual teacher educators in our program have engaged in alignment of coursework with Texas state standards for bilingual educators. Standards are introduced, assessed and reinforced across courses. Another major influence in teacher education programs related to accountability is accreditation (Cochran-Smith & Zeichner, 2005). Our program is currently seeking accreditation by the National Council for Accreditation of Teacher Education (NCATE). In fact, the program is already recognized with conditions. In order to reach this status, the faculty has worked collaboratively in the revising of coursework, alignment of syllabi to standards, design and implementation of assessments, and analysis of data on bilingual teacher candidate performance.

Looking into the Future

Although we have made progress, our goals are not yet fully accomplished. We are on a path of continuous improvement, constantly evaluating our practice and monitoring our pre-service teachers’ performance. There are areas to which we know we must pay special attention. We understand how powerful and meaningful rich clinical experiences are for pre-service teachers. We acknowledge that
successful programs maximize the opportunities their teacher candidates have of interacting with teachers and students out in the field (Darling-Hammond, 2006). Although most courses our pre-service bilingual teachers take in the college of education require some form of field observations or field experiences, we must look towards developing better collaborative relationships with surrounding school districts. Moreover, we must ensure that bilingual pre-service teachers experience high quality clinical experiences by being placed in schools where effective bilingual education practices are taking place.

**CONSIDERATIONS FOR RETHINKING A BILINGUAL TEACHER EDUCATION PROGRAM**

To summarize, the aim of our program review was twofold: (1) to prepare pre-service teachers with the knowledge and pedagogical skills needed to teach all students and, (2) to provide teacher candidates with the opportunity to further develop their linguistic proficiency in Spanish to better serve emergent bilinguals in their primary language. Based on our experience, we can suggest several recommendations for institutions that want to establish or restructure their bilingual teacher education programs:

1. Colleges of education with bilingual teacher education programs should recruit bilingual and biliterate teacher educators who can teach biliteracy and bilingual methods courses in Spanish in order to simultaneously address the content and linguistic needs of bilingual candidates.

2. Bilingual program faculty should understand the Spanish proficiency level of their bilingual candidates and develop coursework around their needs to further the candidates’ abilities to teach in Spanish.

3. Language development should be infused across coursework to maximize the opportunities for candidates to develop bilingualism and biliteracy for teaching and learning.

4. Border pedagogy should be incorporated to promote enhancement of pride in candidates’ heritage, language, and culture and their ability to transmit such pride to their future students.
5. Ultimately, bilingual teacher candidates should become advocates for bilingual learners and agents of change who demonstrate a high level of professionalism.

We believe that bilingual programs that are able to implement the above five keys can positively impact the experiences of bilingual teacher candidates.
REFERENCES


THE DEVELOPMENT OF AN INSTRUMENT TO MEASURE FACTORS THAT IMPACT PRESERVICE TEACHERS’ PERCEIVED FIELD COMMITMENT IN TEACHER PREPARATION PROGRAMS

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INTRODUCTION

On average, 30% of early-career teachers (closer to 50% in high-poverty areas) leave the classroom within their first three years resulting in continuous vacancies in the teaching profession (Hargreaves & Fullan, 2012). This lack of commitment on the part of early-career educators creates a revolving door of valuable assets, which is extremely costly. Vast amounts of time, money, and other resources are spent training them for less than three years of service, which in turn increases the burden on teacher preparation programs to replenish the pool of qualified teachers. Since commitment to the teaching field directly impacts self-efficacy, which influences student achievement (Hargreaves & Fullan, 2012), these variables should be emphasized in teacher education programs. Self-efficacy in the areas of teaching strategies, classroom management, and student engagement generally peaks in the range of 20 to 25 years of experience (Klassen & Chiu, 2010), indicating that a large portion of teachers are not reaching their maximum potential in these areas before they exit the teaching profession. Teachers who do not feel adequately prepared are more likely to leave the field sooner than those who feel better equipped (Darling-Hammond, Chung, & Frelow, 2002; Hoigaard, Giske, & Sundsli, 2012), which suggests the
importance of teacher education programs developing preservice candidates self-efficacy for the sustenance of the teaching field.

Teacher education programs are not only responsible for providing candidates with the content knowledge and teaching skills necessary to succeed in the profession, but also for aiding in the development of those candidates’ confidence in their own abilities to teach and their career choice. Teachers’ feelings of self-efficacy with regard to their practice affect their own classroom behaviors which in turn are linked to student outcomes (Tschannen-Moran & Johnson, 2011; Darling-Hammond, Chung, & Frelow, 2002) and influence their career intentions (Klassen & Chiu, 2011). This connection between feelings of readiness and ability and career longevity further demonstrates the important role that teacher education programs play in the sustenance of the profession as they are the training ground for the preparation and provision of the new generations of educators.

Teacher education programs need to assess their own effectiveness as they make decisions about the coursework and clinical experiences they provide to build their students’ knowledge and skills as well as their confidence. According to Daniels, Madzuck, Perry, and Moore (2011), an understanding of how the program components and overall outcomes relate to psychosocial variables (e.g., self-efficacy and commitment to teaching) might help identify which facets are most essential in the preparation of new teachers. This knowledge can inform programmatic revisions that address both the perceptions and intentions of the candidates as well as more, traditional outcomes like student achievement (Daniels et al., 2011).

**Challenges for measuring self-efficacy and teaching field commitment**

To assess the self-efficacy and field commitment of teacher education program students, researchers must rely on self-report measures gathered from the candidates themselves. This task is made difficult due to issues in conceptualizing the variables of interest. Researchers continually try to develop instruments that can effectively measure self-efficacy, but concerns with validity have persistently

In addition to obstacles in instrument development, validity threats related to self-report data are of concern. The common issues having to do with situational, personal, and cognitive factors are present as well as potential problems with the nature of reporting on confidence in one’s own abilities and predictions about one’s own future career commitment and success. This is due to potential influence of the Kruger-Dunning Effect, which asserts that people have a tendency to overestimate their abilities with relation to areas where they lack proficiency and underestimate themselves in areas where they tend to excel (Dunning, Johnson, Ehrlinger, & Kruger, 2003). This can be problematic if respondents miscalculate their capabilities in reference to their teaching and classroom management skills along with other relevant abilities associated with procuring and maintaining a teaching position.

The purpose of the present study was to report on the development of a self-report survey that measures general education and professional skills self-efficacy and the perceived field commitment of teacher education candidates. The goal of the study was to answer the following research questions: (1) Can a reliable and valid instrument be developed that measures the general education skills self-efficacy, professional skills self-efficacy, and field commitment variables and (2) What is the association between general education skills self-efficacy, professional skills self-efficacy, and field commitment?

METHODS

Participants

The participants in the study were 465 current students in an undergraduate teacher education program at a large research university in the southwestern region of the United States. Of the sample, 463 respondents reported their gender, student classification, and certification area (results shown in Table 1). From all contacted students, 34% responded and participated in the study. The present study examines the relationship between the students’ general education and professional skills self-efficacy and their perceived long-term commitment to the teaching field.
Table 1
Percentage of Respondents Sorted by Gender, Classification, and Certification Area

<table>
<thead>
<tr>
<th>Gender</th>
<th>Male</th>
<th>19 (4.1%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female</td>
<td>445 (95.7%)</td>
</tr>
<tr>
<td>Classification</td>
<td>Freshmen</td>
<td>74 (15.9%)</td>
</tr>
<tr>
<td></td>
<td>Sophomores</td>
<td>54 (11.6%)</td>
</tr>
<tr>
<td></td>
<td>Juniors</td>
<td>130 (28%)</td>
</tr>
<tr>
<td></td>
<td>Seniors</td>
<td>158 (34%)</td>
</tr>
<tr>
<td></td>
<td>5th-Year Seniors</td>
<td>45 (9.7%)</td>
</tr>
<tr>
<td></td>
<td>“Other”</td>
<td>2 (.4%)</td>
</tr>
<tr>
<td>Certification Area</td>
<td>EC-4</td>
<td>91 (19.6%)</td>
</tr>
<tr>
<td></td>
<td>EC-6</td>
<td>173 (37.2%)</td>
</tr>
<tr>
<td></td>
<td>4-8</td>
<td>196 (42.2%)</td>
</tr>
</tbody>
</table>

Instrument

The Current Undergraduate Survey, administered online in the fall semester of 2009, is the focus of the current analysis. All undergraduate students in the teacher education program were invited to participate in the survey. The survey consists of 96 Likert-type items soliciting feedback regarding: basic demographic information (including gender, ethnicity, and classification), teaching and professional skill confidence levels, and future aspirations (long-term field commitment). The instrument was adapted from previous instruments that addressed the self-confidence of teachers and best practices in teacher education (Boyd, et al, 2008; Dean & Lauer, 2003; Dean, Lauer, & Urquhart, 2005). Exploratory factor analyses were performed for all Likert-type survey questions to consolidate related items within the data set into concise variables. The reliability of the obtained factors was determined by Cronbach’s alpha.
Operational definitions

**Self-efficacy.** Bandura (1977) argued that self-efficacy is a predictor of performance because people assume a level of success on future tasks based on past outcomes, which influence attitude and behavior in the form of intensity of effort and persistence. Bandura found that these beliefs are a response to the feedback one receives based on first-hand and indirect experiences, social circumstance, and innate characteristics. Beliefs about prospective capabilities are based partially on past performance in relevant situations as well as motivation and environment or context. Based on Bandura, self-efficacy in the present study is the measure of confidence a person expects he or she will show in future situations (Tschannen-Moran & Woolfolk Hoy, 2001).

**General education skills self-efficacy.** Content or task-specific self-efficacy is the belief in one’s future abilities to perform general education tasks with success in normal classroom situations. Since the focus of the survey is preservice teachers, this measure is a perception of how confident the participants feel they will be able to implement these specific skills.

**Professional skills self-efficacy.** Professional self-efficacy is the belief in one’s ability to confidently perform tasks associated with the teaching career including preparation, entrance, and working with diverse populations of people (Lent & Brown, 2006). This measure is a perceived confidence of the participants and how prepared they feel to complete tasks associated with obtaining a professional teaching position.

**Teaching field commitment.** For the purpose of this study, teaching field commitment is defined as candidates’ intentions to enter the teaching field upon completion of the certification process and their perceived dedication as evidenced by their intentions to remain in the field for time periods of three, five, and ten years. Commitment is driven by self-efficacy and affects student achievement (Hargreaves & Fullan, 2012).
RESULTS

The three variables of interest - general education skills self-efficacy, professional skills self-efficacy, and teaching field commitment - were isolated from the survey through factor analysis. General education skills self-efficacy is a mean average of the 14 survey items from the General Instruction section of the survey (see Table 2). Together, they address the students’ comfort with and confidence in their current abilities to effectively perform many cross-disciplinary teacher tasks, some of which include classroom management, parent and family communication across various methods, subject-area and technology integration, working with special needs students, differentiation, and self-reflection. This factor has a Cronbach’s alpha ($\alpha = .949$) and variance accounted for ($R^2 = .596$).
Table 2  
*Factor Structure of General Education Skills Self-Efficacy*

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor I (General Education Skills SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establish and maintain effective classroom management</td>
<td>.691</td>
</tr>
<tr>
<td>Create a lesson plan</td>
<td>.665</td>
</tr>
<tr>
<td>Develop strategies for working with parents and families</td>
<td>.768</td>
</tr>
<tr>
<td>Recognize and respect individual family differences</td>
<td>.756</td>
</tr>
<tr>
<td>Conduct parent-teacher conferences</td>
<td>.729</td>
</tr>
<tr>
<td>Integrate multiple subject areas</td>
<td>.792</td>
</tr>
<tr>
<td>Employ effective instructional strategies for students with special needs</td>
<td>.770</td>
</tr>
<tr>
<td>Differentiate instruction for all students</td>
<td>.788</td>
</tr>
<tr>
<td>Employ effective instructional strategies for students from varying socioeconomic backgrounds</td>
<td>.817</td>
</tr>
<tr>
<td>Create a learning environment that encourages students to appreciate cultural diversity</td>
<td>.821</td>
</tr>
<tr>
<td>Recognize diverse learning styles</td>
<td>.784</td>
</tr>
<tr>
<td>Integrate technology in the development and delivery of instructional content</td>
<td>.746</td>
</tr>
<tr>
<td>Use manipulatives across subject areas to teach concepts</td>
<td>.769</td>
</tr>
<tr>
<td>Use reflective action to develop a deeper understanding of personal teaching beliefs, styles, and practices</td>
<td>.815</td>
</tr>
<tr>
<td>Cronbach’s alpha</td>
<td>.949</td>
</tr>
<tr>
<td>Total Variance Explained (%)</td>
<td>59.605</td>
</tr>
</tbody>
</table>

Professional skills self-efficacy reflects a mean average of all five survey items (see Table 3) from the Professionalism section of the survey, which have to do with students’ perceptions of their abilities to create a résumé, initiate a job search, conduct themselves in an interview, identify and join
professional organizations pertinent to their fields, and read research-based articles related to their fields. The factor has a Cronbach’s alpha ($\alpha = .858$) and variance accounted for ($R^2 = .639$).

Table 3  
*Factor Structure of Professional Skills Self-Efficacy*

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor I (Professional Skills SE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create a résumé</td>
<td>.811</td>
</tr>
<tr>
<td>Initiate a job search</td>
<td>.869</td>
</tr>
<tr>
<td>Conduct myself in an interview</td>
<td>.735</td>
</tr>
<tr>
<td>Identify and join professional organizations pertinent to my field</td>
<td>.848</td>
</tr>
<tr>
<td>Read research-based articles related to my field</td>
<td>.723</td>
</tr>
<tr>
<td>Cronbach’s alpha</td>
<td>.858</td>
</tr>
<tr>
<td>Total Variance Explained (%)</td>
<td>63.928</td>
</tr>
</tbody>
</table>

Teaching field commitment is a mean average of five items (see Table 4) from the Reflections/Future Aspirations section of the survey, including: “if I could start over, I would again choose education as my field of study”; “immediately following graduation, I plan on obtaining a full-time teaching position in my certification area”; “three years after graduation, I plan to still be in the classroom teaching”; “five years after graduation, I plan to still be in the classroom teaching”; and “ten years after graduation, I plan to still be in the classroom teaching”. The factor has a Cronbach’s alpha ($\alpha = .867$) and variance accounted for ($R^2 = .654$).

Two of the Reflections/Future Aspirations items were eliminated because they did not meet the minimum criteria of a factor loading greater than .6 and they did not conceptually fit the factor model. Though it loaded into the same factor with the previous items, “If I could start over, I would again choose to attend [this university] for a degree in education” had a factor loading of .579. Also, its focus deviated from commitment to the teaching field as it instead emphasized satisfaction with the program itself. The principal component analysis resulted in a second factor consisting of a single survey item, “At some
point in the future, I plan to attend graduate school for an advanced degree in education”, which was excluded as well.

Table 4
Factor Structure of Teaching Field Commitment

<table>
<thead>
<tr>
<th>Items</th>
<th>Factor I (Long-Term Field Commitment)</th>
</tr>
</thead>
<tbody>
<tr>
<td>If I could start over, I would again choose education as my program of study.</td>
<td>.722</td>
</tr>
<tr>
<td>Immediately following graduation, I plan on obtaining a full-time teaching position in my certification area.</td>
<td>.717</td>
</tr>
<tr>
<td>Three years after graduation, I plan to still be in the classroom teaching.</td>
<td>.891</td>
</tr>
<tr>
<td>Five years after graduation, I plan to still be in the classroom teaching.</td>
<td>.889</td>
</tr>
<tr>
<td>Ten years after graduation, I plan to still be in the classroom teaching.</td>
<td>.786</td>
</tr>
<tr>
<td>Cronbach’s alpha</td>
<td>.867</td>
</tr>
<tr>
<td>Total Variance Explained (%)</td>
<td>65.442</td>
</tr>
</tbody>
</table>

Table 5 displays the high reliability scores for the factors gleaned from analyzing the loadings of the Likert-scale items into factors. The most striking benefit of the current survey is the high reliability scores (α = .858 - .949). Moreover, the variance accounted for is listed for each variable. This identifies the amount of variance each factor accounts for on the variable given. While none of these values are 100%, indicating that some part of the variable is missing, the values are relatively high ($R^2 = 59.605 - 65.442\%$).
Table 5
*Factor Analyses Reliability Scores and Variance Accounted for Scores*

<table>
<thead>
<tr>
<th>Factor</th>
<th>Cronbach’s Alpha</th>
<th>Variance Accounted For</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education Skills Self-Efficacy</td>
<td>.949</td>
<td>59.605%</td>
</tr>
<tr>
<td>Professional Skills Self-Efficacy</td>
<td>.858</td>
<td>63.928%</td>
</tr>
<tr>
<td>Teaching Field Commitment</td>
<td>.867</td>
<td>65.442%</td>
</tr>
</tbody>
</table>

Looking solely at means and standard deviations also sheds some light on the reliability of the scores. Because the pool of respondents is fairly homogenous, their responses were also homogenous. For the field commitment variable, the score possibilities ranged from one to four, with a score of “4” representing “strongly agree” and a score of “1” representing “strongly disagree”. For general education skills self-efficacy and professional skills self-efficacy, a score of “1” represented “not at all confident” while score of “4” meant “extremely confident”.

Table 6 shows the means and standard deviations for general education skills self-efficacy, professional skills self-efficacy, and field commitment. Teaching field commitment had the highest mean ($M = 3.485$) and the lowest standard deviation, indicating that many participants responded favorably to the items. Many preservice teachers feel strongly towards their commitment to stay in the field long-term, which supports the Dunning-Kruger effect that preservice teachers may not know in actuality how long they will stay in the field, but have high intentions based on their lack of knowledge.

Moreover, Table 6 shows that the professional skills self-efficacy variable has the lowest mean ($M = 2.771$), which fell below the “confident” level, and had the largest standard deviation. This indicates that preservice teachers showed the most variation among the survey items related to behaving
in a professional manner and completing professionally-oriented tasks. This low mean can partially be attributed to the fact that the preservice teachers surveyed have not yet participated in the professional atmosphere of teaching.

Finally, for the general education skills self-efficacy variable, preservice teachers had a mean average score \( M = 3.129 \), indicating that they felt confident in their general teaching skills. The average suggests that from this teacher education program, preservice teachers leave feeling confident in how to teach and basic teaching practices. The high mean from this variable could also be a contributing factor to the high mean associated with perceived field commitment. The idea behind this high correlation is that if preservice teachers feel confident and adequately prepared to teach, they are going to perceive staying in the field longer than their less confident, less prepared counterparts.

### Table 6

**Factor Analyses Means and Standard Deviations**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Education Skills Self-Efficacy</td>
<td>3.129</td>
<td>.577</td>
</tr>
<tr>
<td>Professional Skills Self-Efficacy</td>
<td>2.771</td>
<td>.728</td>
</tr>
<tr>
<td>Teaching Field Commitment</td>
<td>3.485</td>
<td>.529</td>
</tr>
</tbody>
</table>

### Correlations

The correlations reveal that general education skills self-efficacy, professional skills self-efficacy, and field commitment are related. Shown in Table 7, the two self-efficacy variables, general education and profession, have a positive, moderate, significant correlation, indicating that the two variables are highly related to each other. Participants who showed high self-efficacy for one variable generally
showed high self-efficacy for the other variable. The relationship between general education skills self-efficacy and field commitment was low, positive and significant, as was the correlation between professional skills self-efficacy and field commitment. This indicates that if participants had positive self-efficacy, they anticipated a longer commitment to the field.

Table 7  
Correlations between General Education Skills Self-Efficacy, Professional Skills Self-Efficacy, and Field Commitment

<table>
<thead>
<tr>
<th></th>
<th>GenEdSkSE Pearson Correlation</th>
<th>ProfessionalSE Pearson Correlation</th>
<th>FieldCommit Pearson Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>GenEdSkSE</td>
<td>1</td>
<td>.553**</td>
<td>.225**</td>
</tr>
<tr>
<td>Sig. (2-tailed)</td>
<td></td>
<td>.000</td>
<td>.170**</td>
</tr>
<tr>
<td>N</td>
<td>360</td>
<td>340</td>
<td>335</td>
</tr>
<tr>
<td></td>
<td></td>
<td>367</td>
<td></td>
</tr>
</tbody>
</table>

Note: **p < .001

DISCUSSION

Preservice teacher self-efficacy is positively correlated with perceived field commitment; however, since the two variables are highly correlated, it can be difficult for teacher educators to siphon out which variable carries more weight. The question persists: do teachers with high self-efficacy stay in the field longer or does self-efficacy grow as teachers stay in the field? The lack of qualified teachers who stay in the field long-term is a serious problem. In order to boost the longevity of teachers’ careers in the classroom, teacher educators need to focus on how best to improve the quality of teacher education programs. The present study sought to develop an instrument that capitalized on the unique differences among variables of self-efficacy to explain preservice teachers’ perceived commitment to the field of education.
Teacher education programs can utilize this information to better understand where differences in field commitment as it pertains to general education skills and professional skills self-efficacy may exist. Educators in teacher preparation programs can also analyze which components of self-efficacy their preservice teachers feel weakest about. Self-efficacy begets longevity as the way preservice teachers perceive their teaching skills transforms how they self-actualize as inservice teachers (Tschannen-Moran & Johnson, 2011). By building upon self-efficacy, teacher education programs can help boost the numbers of teachers staying in the field of education long-term.

While the high reliabilities are of interest, several limitations exist which could be affecting the data. First of all, the data were analyzed through secondary data analysis. Since we did not develop the survey nor collect the data, we can only focus on information that was obtained through the initial implementation of the survey. Secondly, as seen from Table 1, the participants represent a homogenous grouping with 95.7% of the sample representing the female population and 88.4% being white or not of Hispanic origin. Finally, the entire sample was obtained from one university. Participation from a wider diversity of universities could lead to more diversity within the sample and more representative of the greater population being studied.

Further research is needed in which the survey instrument is tested with multiple samples and the results are compared. Only through repeated measures can we determine whether the reliability of the instrument withstands various groups with differing demographic qualities. These repeated measures with various groups will also allow the field a more holistic illustration of the connection between self-efficacy and field commitment of preservice teachers based on their gender, age, ethnicity, and certification area.

Teacher education has turned into a costly enterprise in which dividends are not capitalized upon and received in full to the customers – students. Billions of dollars are spent each year on training teachers, yet the dividends turn up in the negative column as teachers leave the field prior to maximizing the returns on their teaching investment. In order to see higher returns on student success coming out of
highly qualified teachers, educator preparation programs need to focus on building self-efficacy skills for teachers to boost the numbers who stay in the field longer; thus, increasing the return on the teaching investment for districts, schools, and students.
REFERENCES


THE TEXAS FORUM OF TEACHER EDUCATION
2014 CALL FOR MANUSCRIPTS & PUBLICATION GUIDELINES

Guidelines: Manuscripts should be 2,500 to 5,000 words in length. Topics should be of interest to Texas teacher educators. All documents should be PC formatted in Microsoft Word.

Send the following to the editor at mm023@shsu.edu

Electronic documents, sent as e-mail attachments must include:
- A copy of the abstract (200-word maximum) and manuscript with author(s) information (name, title, institution, and e-mail)
- A copy of the abstract and manuscript with NO AUTHOR INFORMATION
- A separate cover sheet with all author(s) contact information
- A vita for each author

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Acceptance Options:
Articles may be accepted as full-length publications or as research briefs, upon recommendation of reviewers and consent of author(s). Authors must be active TxATE members as a condition of publication.

Manuscript Style:
- APA format, 6th edition (Standard font: Times Roman, 12 point)
  - Double space, but NO PAGE NUMBERS.
  - All abbreviations and acronyms spelled on initial use.
  - Indent first line of every paragraph one-half inch.
  - Align text to left margin, leaving a “ragged” right margin.
  - PLEASE follow leveled headings format (levels 1, 2, & 3 for most manuscripts).

    Level 1 – Centered and Boldface, Uppercase and Lowercase Headings
    Level 2 – Flush left, boldface, Uppercase and Lowercase Headings
    Level 3 – Indented, boldface, lowercase heading ending with a period.

  - Article Title – Author’s Name and Affiliation – printed in plain text, single-spaced, centered.
  - Spelling, grammar, and copyright considerations are the responsibility of the author(s).
  - No headers, footers, page numbers, abstracts or fancy desktop publishing attributes are necessary.

Submission Deadline: June 15, 2014

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