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A Case Study of Applying Blended Learning in an Accelerated Post-Baccalaureate Teacher Education Program

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Abstract: *Blended learning has potential to improve teacher education in terms of accessibility and quality. This paper reports findings from a case study with mixed methods data collection analysis to examine the application of blended learning in accelerated post-baccalaureate teacher education at the program level. One hundred and sixty-seven recent graduates from a chosen teacher education program participated in the study by completing an online survey. Eight of the survey participants and six faculty members were interviewed. Findings from this study support the viability and benefits of applying blended learning in teacher education at the program level. On the other hand, teacher candidates and faculty members reported challenges in such blended learning teacher education programs. Suggestions for applying blended learning in teacher education at the program level are discussed in this paper.*

Keywords: blended learning, teacher education, integrated field experience

1. Introduction

By combining online and face-to-face formats, educators may achieve the inherent benefits of both types of instruction through a harmonious balance of virtual access to knowledge and physical human interaction. This approach has been labeled as blended learning (Graham, 2006; Osguthorpe & Graham, 2003). Blended learning may occur at different levels of instruction: (a) at the activity level, when a

learning activity contains both face-to-face and computer-mediated elements; (b) at the course level—the most common—where both face-to-face and computer-mediated activities are included as part of a course; (c) at the program level, when participants take both online and face-to-face courses in a program; and (d) at the institutional level with an organizational commitment to blending face-to-face and computer-mediated instruction (Graham, 2006).

Blended learning has been applied in higher education, workplace learning settings, and K-12 schools and may lead to improved pedagogy, increased access and flexibility, and increased cost-effectiveness (Graham, 2006; Halverson, Graham, Spring, & Drysdale, 2012). In addition, blended learning may be used to “foster learning communities, extend training events, offer follow-up resources in a community of practice, access guest experts, provide timely mentoring or coaching, present online lab or simulation activities, and deliver prework or supplemental course materials” (Bonk, Kim, & Zeng, 2006, p. 560).

Compared to the research on blended learning in other disciplines, limited research has been done on blended learning in teacher education specifically (Young & Lewis, 2008). A few studies have focused on exploring the benefits of applying blended learning in teacher education. King’s (2002) case study explored the dynamics and experiences of the instructor and students participating in a hybrid/blended teacher education program. The conclusion was reached that blended learning may present an opportunity to develop interactive and collaborative learning communities for pre-service teachers through overcoming the drawbacks of online instruction and minimizing the inconvenience of traditional face-to-face instruction.

Delfino and Persico (2007) conducted a five-year case study (from 2001-2005) of an education technology course in teacher education. The researchers proposed online learning in pre-service teacher training because student teachers participating in online learning were more likely to use similar methods with their students when they had first-hand experience themselves. Student teachers’ experiences with online learning also may encourage their future participation in communities of practice, which would further promote teachers’ development.

Harrell and Harris (2006) compared performance of candidates in the Online Post Baccalaureate Program to those in the traditional accredited baccalaureate program for secondary teacher preparation at the University of North Texas. Findings of the study indicated that the online program significantly increased the number of diverse candidates entering teaching, in conjunction with the number of candidates prepared by the university in the critical areas of science and mathematics. In addition, they found the performance of online teacher candidates was equal to that of traditional program candidates on indicators such as GRE scores, state certification tests, and portfolio ratings. Moreover, the candidates themselves reported satisfaction with the online program.

Young and Lewis (2008) examined the perception of teacher candidates in distance education programs at seven universities in the United States. The researchers concluded that teacher candidates in distance programs were generally positive about distance education in terms of overall satisfaction and enjoyment. Yilmaz and Orhan (2010) examined the academic performance and satisfaction level of pre-service English teachers. They concluded that pre-service English teachers were generally highly satisfied with the blended learning environment. The researchers advised to apply blended learning in the training of pre-service English Language teachers with different learning approaches.

A few research studies have also been conducted to examine different aspects of blended learning in teacher education. Ausburn (2004) found that adult learners in teacher education value learner options, variety of choices, and self-directedness in their learning opportunities. The study also supports the idea that in online instruction, like other traditional environments, learners with different characteristics prefer and

benefit from a variety of instructional features and goals. Motteram's (2006) case study examined the perception of graduate students in teacher education towards blended learning and provided guidelines for utilizing online discussion forums in conjunction with face-to-face classes. Findings of the study suggested that when tasks in a blended learning environment were relevant to learners and set up well, the tasks would help learners develop their knowledge and skills.

Reynolds and Greiner's (2005) report on the application of blended learning in National University's teacher education programs revealed that blended learning has been applied in not only residential teacher education programs, but also online programs. In this case, the blend occurred when online students met with their supervisors during their field experiences. This emerging phenomenon of the blend coming in the other direction—adding face-to-face experiences to online programs – signifies the importance of studying the application of blended learning in teacher education not only at the course level, but also at the programmatic level.

More research studies that examine blended learning in teacher education at the program level are needed. There are unanswered questions such as what benefits and drawbacks blended learning offers to teacher education at the program level; how to balance online and face-to-face learning to maintain the structural and conceptual coherence of a teacher education program (Hammerness, 2006); and what teacher educators, administrators, and policy makers need to know to create strategic plans and directions (Bonk et al., 2006). This study aims to address some of the questions by examining the application of blended learning in an accelerated post-baccalaureate teacher education program at the program level. The research questions include:

What are the perceived advantages and challenges of applying blended learning in teacher education at the program level?

What are the wise practices for applying blended learning in teacher education at the program level?

2. Method

2.1. Context

A private university in the west of the United States was chosen for this study. The university has approximately 26,000 students, about half of whom are enrolled in teacher education. The university offers single-subject (Secondary Education) and multiple-subject (Elementary Education) teaching certificates and Master's degrees in education. The main programs in teacher education are post-baccalaureate programs, meaning that students in the program already obtained an undergraduate degree, worked in various professions including schools, and are enrolled in their program to obtain teaching licensure. Teacher candidates in the programs are required to complete ten courses and eighteen weeks of student teaching for teaching licensure. Each course lasts four weeks. The university has satellite campuses called "learning centers" throughout the region. Due to enrollment, not every course is offered in all learning centers. However, all of the courses are available online with a total of 300 online courses offered each year. Seven among the ten required courses contain two field-based assignments in each course.

Teacher candidates may choose to complete the entire program online with the exception of student teaching. They may also mix and match online and face-to-face courses or take all courses face-to-face on site at the learning centers. Graham (2006) defines blended learning at the program level as when participants take both online and face-to-

face courses in a program. The availability of all courses online and the choices for candidates to take all courses online, face-to-face, or in mix and match make the examined teacher education programs blended learning programs by emphasizing the application of blended learning at the program level.

2.2. Participants

One hundred and sixty-seven participants (n=167) from the teacher education programs at the chosen university completed an online survey in 2007 and 2008 (n=148 in 2008 and n=19 in 2007). Survey participants included both female (n=111, 68%) and male (n=53, 32%) candidates. Most participants (n=151, 92%) completed their teaching credentials program in 2007 or 2008. Over half of the participants (n=97, 59%) reported current teaching positions. The majority of participants were over 25 years old (n=140, 85%). About one-third of the participants were working towards their Elementary Education credentials (37%), and another third towards different subjects in Secondary Education (39%). Remaining participants' areas of study included Special Education, Art Education, Music Education, and Physical Education. Some participants (10%) focused on more than one area of study such as Elementary and Secondary English Education, Secondary Science and Physical Education, or Early Childhood and Secondary Math Education. The majority of participants (n=135, 82%) were working full- or part-time when they had been enrolled. Over half of the participants (n=105, 64%) took at least half of the courses in their program online, including 29% of them who took all of their courses online and 25% who took half or more courses online. On the other hand, 36% of participants took more than half of their courses face-to-face. The participants' course formats reflected the blended learning nature of the teacher education programs.

Eight survey participants were interviewed after completing the online survey. Five of them were female and three were male. Three of them took all classes online, one took most classes online with a few face-to-face, three took most classes face-to-face with a few online, and one took only one class online. Seven of them were in the teaching profession when participating in the study, working as full-time teachers or substitutes in different subject areas such as Math, English, Social Studies, and Economics.

In addition, six faculty members, including one program director, one program co-chair and four key faculty members participated in the interviews. The participating faculty members taught courses in different areas including foundation of education, educational psychology, classroom management, reading, math, and student teaching.

2.3. Data Analysis

This study applies a case study method with mixed methods data collection and analysis. Both quantitative and qualitative data were collected including survey data (quantitative and qualitative), interview data (qualitative), and documents such as course syllabus (qualitative).

Frequency and percentage, factor analysis, correlation, means, and standard deviations were conducted to analyze the numerical survey data. The second half of the survey contained 25 Likert-scale items. For each item, the participants were asked to choose their answers from a scale of 1-5 (1 = Strongly Disagree; 2 = Disagree; 3 = Undecided; 4 = Agree; 5 = Strongly Agree). The 25 Likert-scale items ask for participants' perspectives towards different aspects of a blended learning environment. Exploratory factor analysis was used to group items and identify latent constructs in the survey for analysis, and also to provide exploratory evidences

for the theoretical relationships among the constructs. Factors were extracted based on common variance. The number of factors was determined using screen plot of Eigenvalues and theoretical judgment. Internal consistency reliability of the survey was analyzed using Cronbach's alpha. Participants' responses to open-ended questions in the survey were tallied and combined to generate common themes.

Interview data were analyzed to identify common themes of candidates' and faculty members' experiences and perceptions of blended learning. The constant comparative method (Glaser, 1965) was used to code and analyze interview data. After coding all teacher candidate and faculty interview data, a professional statistician was asked to code one teacher candidate interview and one faculty interview transcriptions into generated categories and themes. An 83% inter-rater reliability rate was reached for coding student interviews and 85% for coding faculty interviews. The places of disagreement

were discussed between the coders to reach agreement. The coding categories and themes were revised based on the discussion between coders. All interviews were reviewed for the revised coding categories and themes.

Two course syllabi, one student program of studies and one assessment form of student teaching performance, were collected from faculty during interviews. These documents were examined to draw information about the courses in the program and to support findings from the survey and interviews.

3. Results

3.1. Results of Analyzing Survey Data

3.1.1. Candidate satisfaction. Participants were asked to gauge satisfaction with their teacher education program. Most participants (95%) indicated that they were very satisfied or somewhat satisfied with their program (see Table 1).

Table 1. Participants' satisfaction of the program

<i>Categories</i>	<i>N (%)</i>
Very satisfied	84 (57%)
Somewhat satisfied	56 (38%)
Not sure	5 (3%)
Not satisfied	0 (0%)
Other	2 (1%)

3.1.2. Domains of candidate perceptions. Exploratory factor analysis was used to analyze the second half of the survey, which contained 25 Likert-scale items. The analysis resulted in 5 factors / domains explaining 95% of common variances (see Figure 1) of the 25

items in the survey asking for participants' experiences and perception of: (1) Interaction, (2) Practices in curriculum, (3) Control of learning, (4) Faculty supervision, and (5) Effectiveness of online learning in teacher education (see Table 2-6).

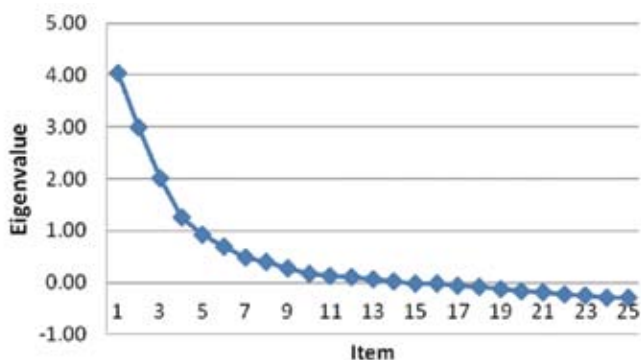


Figure 1. Screenplot of Item Eigenvalues

Table 2. Domain of interaction: Candidate perceptions of student-instructor and student-student interaction

<i>Item</i> ($\alpha=0.78$)	<i>M</i>	<i>SD</i>	<i>Factor Loading</i>	<i>Item-Total Correlation</i>
Interaction with instructors was vitally important for me to learn any subject in my teacher education program.	3.71	1.23	0.66	0.75
Interacting with other students in my teacher education program helped me to learn.	3.77	1.19	0.74	0.72
I believe I had adequate interaction with my instructors in the program to help my learning.	3.86	0.93	0.61	0.77
I had adequate interaction with my fellow students in the program to help my learning.	4.03	0.84	0.63	0.74
I learned best when collaborating with other students.	3.30	1.19	0.67	0.73

Table 3. Domain of practices: Candidate perceptions of practices in curriculum

<i>Item</i> ($\alpha=0.74$)	<i>M</i>	<i>SD</i>	<i>Factor Loading</i>	<i>Item-Total Correlation</i>
My teacher education program gave me chances to practice what I learned in the courses.	3.87	0.98	0.71	0.69

*A Case Study of Applying Blended Learning
in an Accelerated Post-Baccalaureate Teacher Education Program*

Students in teacher education need opportunities to practice what they have learned in class in order to master the skills and knowledge.	4.28	0.99	0.49	0.74
The field experience assignments in all courses helped to prepare me to become a successful teacher.	3.89	0.95	0.64	0.70
The program I went through serves my needs better than a traditional teacher preparation program.	4.01	1.00	0.46	0.70
I believe my program adequately prepared me to become a successful teacher in K-12 classrooms.	4.28	0.78	0.58	0.69
I was highly motivated to succeed in my program.	4.66	0.59	0.41	0.73
I spent 2-3 hours studying for each credit hour I enrolled in; that is, I spent about 6-9 hours each week studying for a 3-credit hour course when I was in the program.	3.93	1.06	0.26	0.74

Table 4. Domain of learner control: Candidate perceptions of learner control of learning

<i>Item ($\alpha=0.74$)</i>	<i>M</i>	<i>SD</i>	<i>Factor Loading</i>	<i>Item-Total Correlation</i>
I am a self-directed learner.	4.21	1.00	0.76	0.62
Self-directedness was the key for students to succeed in my teacher education program.	3.96	1.16	0.59	0.72
Students in teacher education need to have control of their learning in order to achieve high learning outcomes.	3.91	0.94	0.63	0.69
Time engaged in learning makes a difference in a student's learning achievement.	4.12	1.04	0.64	0.72

Table 5. Domain of Supervision: Candidate perceptions of faculty supervision

Item ($\alpha=0.50$)	<i>M</i>	<i>SD</i>	<i>Factor Loading</i>	<i>Item-Total Correlation</i>
I wish I could have more supervision during the field-based experiences in the program.	2.37	0.89	0.43	0.41
I needed immediate feedback from my instructor(s) when taking an online course.	3.56	1.08	0.44	0.47
I wish I could have more online interaction with my instructor(s) in my teacher education program.	2.80	1.11	0.61	0.33
I learned best when I had chance to solve real problems.	4.04	0.73	0.38	0.50

Table 6. Domain of effectiveness of online learning: Candidate perceptions of the effectiveness of online learning in teacher education

<i>Item ($\alpha=0.79$)</i>	<i>M</i>	<i>SD</i>	<i>Factor Loading</i>	<i>Item-Total Correlation</i>
I believe online courses in a teacher education program can be taught as effectively as those face-to-face on site.	3.18	1.36	0.76	0.71
I believe all content in a teacher education program can be taught more effectively online than face-to-face on site.	2.28	1.07	0.74	0.74
I believe more teacher education programs should have online options.	3.71	1.11	0.67	0.75
Self-paced learning was the best of online courses.	3.73	1.05	0.58	0.79
I believe all teacher education programs will eventually go online.	2.66	1.15	0.56	0.78

*A Case Study of Applying Blended Learning
in an Accelerated Post-Baccalaureate Teacher Education Program*

Mean, median, and standard deviation were calculated for each domain for an overall understanding of teacher candidate perceptions of blended learning in teacher education. Generally speaking, participants in the surveys indicated more positive perceptions

of instructor-student and student-student interaction, practices in the curriculum, learner control, faculty supervision, and effectiveness of online learning in their blended teacher education program (see Table 7).

Table 7. Mean, median, and SD for all domains of student perception

<i>Domain</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Media</i>	<i>SD</i>	<i>Cronbach's alpha</i>
Interaction	1.40	5.00	3.74	3.80	0.81	0.78
Practices	2.00	5.00	4.13	4.14	0.56	0.74
Learn control	1.00	5.00	4.04	4.13	0.79	0.74
Faculty supervision	1.50	5.00	3.24	3.25	0.64	0.50
Online	1.00	5.00	3.06	3.20	0.88	0.79

3.1.3. Internal consistency reliability. Item-total correlations of survey items range from 0.72 to 0.75 in the domain of interaction, 0.69 to 0.74 in the domain of practices, 0.62 to 0.72 in the domain of learner control, 0.33 to 0.50 in the domain of faculty supervision, and 0.71 to 0.79 in the domain of perceived effectiveness of online learning (see Tables 2-6). The Cronbach's alpha coefficient is 0.78 for the domain of interaction, 0.74 for practices, 0.74 for learner control, 0.50 for faculty supervision, and 0.79 for online effectiveness. The item-total corrections of items and Cronbach's alphas within domains indicate adequate internal consistency reliability for the online survey.

3.1.4. Relationship of domains of candidate Perceptions. A Pearson Correlation was conducted among the five domains of teacher candidate perceptions of blended learning to identify possible relationships among the domains. The results indicate significantly inter-related relationships among most of

the domains. The domain of perception of practices in curriculum is related to three other domains: interaction ($p < 0.0001$), learner control ($p = 0.0001$), and effectiveness of online learning ($p < 0.0001$). Candidate perception of faculty supervision is also related to their perceptions of interaction ($p < 0.001$) and learner control ($p < 0.01$). Candidate perceptions of interaction and faculty supervision are significantly correlated ($p = 0.0002$). No significant association exists between candidate perception of faculty supervision and practices ($p = 0.37$) or between perceptions of faculty supervision and learner control ($p = 0.42$).

3.1.5. Other perceptions. The online survey also included open-ended questions asking for participants to list reasons for choosing to enroll in their program, the advantages and disadvantages of their program, and their suggestions for improving the program. Responses to the open-ended questions were tallied and themes were generated from the

responses. The most frequent responses for participants to choose their program include the ability to complete the program more quickly than traditional teacher education programs (n=57, 34%), the flexible scheduling of courses (n=55, 33%), the availability of online classes (n=44, 26%), and others' recommendation of the program (n=31, 19%).

The most frequently mentioned advantages of the programs overlaps with participants' reasons for choosing their program, including the convenience and flexibility of the program to fit working adults' schedules (n=56, 34%), the quick pace of the program (n=42, 25%), the availability of online courses (n=42, 25%), quality classes and program (n=19, 11%), and strong and experienced instructors (n=17, 10%). On the other hand, the most frequently reported disadvantages of the programs included the high cost (n=29, 17%) and unresponsive instructors (n=24, 14%). About one tenth of the participants (n=19, 11%) responded that they did not see any disadvantages of the programs.

One of the questions in the survey was, "Which online courses you took would have been better taught face-to-face on site?" The most mentioned answer was "none" (n=62, 37%). The opposite response, "all should be taught face-to-face on site," was also heard, though much less frequently (n=18, 11%). Survey participants were also asked what courses they thought would be better taught in a blended format and why they thought this way. The most frequent answer (n=49, 29%) was that none of the courses should be taught in a blended format. Teacher candidates were satisfied with taking the course either online or face-to-face instead of in a blended format, though a smaller portion of participants (n=16, 10%) recognized the benefits of blended learning, especially for visual and auditory learners. Participants commented on this

question such as "I prefer one or the other [face-to-face or online]" and "I think a hybrid situation where online classes are combined with some on-site meetings would be very effective. For me, I learn better when I can physically see and hear what is being said around me."

3.2. Results of Analyzing Teacher Candidate Interviews

Eight survey participants were interviewed, including five females and three males. Three of them took all classes online, one took most classes online with a few face-to-face, three took most classes face-to-face with a few online, and one took only one class online. They reported their opinion towards blended learning in teacher education, advantages and disadvantages of the blended learning programs, and their perceived best practices of such an approach.

3.2.1. Candidates' perceptions of online learning in teacher education. Participating teacher candidates believe that online learning can be as effective as or more effective than face-to-face learning. They view online classes as more challenging than face-to-face classes due to the accountability on students for reading class materials and thinking through response for online discussion, for example:

I honestly think that online might even be more challenging than having face-to-face class format, because it forces you to do the reading. You can't rely on the benefit of lecture... I think that you have even more responsibility in an online class because you are solely responsible for how much you get out of a class.

The effectiveness of online learning depends on teacher candidates' learning styles and computer skills. Some teacher candidates believe they will learn well regardless of the

course delivery format. Some believe that online learning works better for them because they are self-regulated and text-oriented learners. Others emphasize the importance of non-verbal communication in face-to-face classrooms for learning. They also think that the effectiveness of online learning is determined by the content of courses. Contents that are based on facts and self-learning are regarded as more suitable for online learning than courses that require a lot of interaction, problem solving, and applications.

3.2.2. Candidates' perceived advantages.

Convenience and flexibility were reported to be the biggest advantages of the blended teacher education programs. Teacher candidates have the option to take all classes online. The availability of online classes allows candidates access to courses at their chosen time and places and to study at their own pace:

The advantages of taking an online program are flexibility, being able to be a self-directed learner, using the Internet which is available anywhere. If I went out of town or anything, I can still access my course online and do my discussion board, so I didn't feel like I was tied down, I felt like I can still live my life while going to school.

Participants also regard the quality of their program as an advantage due to its practical curriculum and experienced instructors. They value the curriculum and assignments in the program, which were designed for concentrated learning experiences. They also appreciate instructors who have extended and current experiences in K-12 classrooms. In addition, it takes approximately one year or one year and a half for teacher candidates to complete their program of study. This quick pace meets the needs of many teacher candidates and is regarded as another advantage:

I don't do well in a traditional university setting where you have to go for a whole semester for one class. That doesn't suit my learning style. So I really like the format of the way that the [program] set.

3.2.3. Candidates' perceived disadvantages.

The reported disadvantages were centered on concerns of taking the programs online. Online learning requires learners to be self-motivated and self-directed and have intermediate computer skills, which can be disadvantageous for some learners. Technical difficulties may also add to candidates' frustration and confusion in online classes. Some participants complained about the lack of direct interaction with instructors and peers, lack of responses in online discussion board, and lack of immediate feedback in some of their online classes, especially when they had unresponsive instructors:

For the most part that went really well. The other students were very respectful. Even if you disagree, people were very respectful and very kind. There were some occasions when I was posting something to the discussion board that I might not get any response at all. So that was frustrating just because you want that interaction even though you're online.

3.2.4. Candidates' perceived best practices.

The convenience and flexibility of the blended learning programs allow increased access to teacher education. Offering online classes saves teacher candidates' driving time and allows easy and quick access to course materials and other resources. Participants agreed that their learning experience depended largely on the instructors they have in classes. They benefitted from instructors who had extensive experiences in K-12 classrooms and were responsive to students' questions.

Teacher candidates in the interviews viewed the integrated field experiences supported by student teaching as necessary and effective. The integrated field experiences provide candidates with adequate opportunities to have first-hand learning experiences within K-12 classrooms and to bridge theories and practices. Such experiences are especially helpful for online classes and candidates who do not have opportunities to spend a lot of time in classrooms. The integrated field experiences were regarded as one of the programs' best practices as one student said, "Every course forces you to go into some forms of classrooms, and then write an essay or video tape your experiences. And it was more beneficial with more time in a classroom in front of real students."

3.3. Results of Analyzing Faculty Interviews

3.3.1. Faculty perceptions of online learning in teacher education. Faculty members believe online classes could be as effective as face-to-face classes. They realize that online classes call for different teaching methods. Instructors can provide good modeling of different teaching strategies and hold high expectations in online classes:

I strongly believe that you can also do a lot of really good modeling in online environment as well. They will not be the exactly same kind of modeling, but you can still model cooperative learning, you can still model peer type of interaction, you can still model responsiveness, professionalism, and many things are extremely important for students. (Dr. H., Faculty)

However, online classes require learners to be self-disciplined and self-motivated and have high-level thinking skills. Teacher candidates may like or dislike online classes based on their learning styles and personal preferences. Therefore, teacher candidates

should be provided with opportunities to choose the best course delivery format that works for their learning styles.

3.3.2. Faculty perceived advantages and disadvantages. Similar to findings from interviews of teacher candidates, participating faculty members also regard the convenience and accessibility of online courses as the major advantage of their blended teacher education programs. They believe that the availability of online courses gives candidates more choices and access to course materials and library resources.

Faculty members regard the concentrated learning experiences as another advantage of the programs. Teaching and learning are very focused due to the quick courses. The one-month courses meet candidates' needs for efficiency. In addition, both instructors and learners are able to focus and fully engage in the teaching and learning experiences during the courses:

The other thing is that they only focus on one course, one course for one month. Instead of taking 4 courses [for a semester], they take one course for that one whole month. That month we get their full attention. You can really get a lot done. I am amazed at the end of each month I can accomplish more in 1 class than I could. (Dr. M., Faculty)

The overwhelming teaching load can be a big challenge for faculty. Face-to-face classes usually last for 4.5 hours on evenings or weekends. Online classes require faculty members to be available 24 hours a day and 7 days a week. Faculty teaching duties are usually extremely intensive regardless of teaching online or face-to-face classes: "Staying till 10 o'clock at night and having all these other administrative duties during the day, there's no time for grading. It's really tough. There's the torn side of teaching online. You're 24-7" (Dr. M., Faculty).

In addition, teaching online was reported to be particularly challenging. Though teaching online classes can be self-paced, it is time consuming to prepare and have all the materials ready in advance. Some faculty members find it challenging that they cannot have personal interaction and eye contact with students and some contents are difficult to teach online.

3.3.3. Faculty perceived best practices. Offering all courses online year round and providing online services are regarded as one of the advantages and the best practices of the programs. Dr. D, Co-Chair of programs, stated, “I think one of our best practices is providing support and accessibility. Those are really our best practices.”

The integrated field experience is also considered as one of the programs’ best practice. It provides teacher candidates with adequate hands-on learning experiences and opportunities to practice what they learned in the courses. The requirements for field experiences are the same for online and face-to-face classes:

If field experiences are concerned, every student completes the same, whether they take the class on site or online... It’s going to be exactly the same, because if a student is taking the class on site, it doesn’t mean she or he is going to have more experiences in the classroom than some of them taking it online. (Dr. H., Faculty)

The participating faculty members were proud that their online courses were designed using different media to motivate student learning and stayed consistent with face-to-face courses. They also regarded the task of continually revising course content to remain current and engaging as good practice.

3.4. Results of Analyzing Documents

Documents collected during faculty interviews included one student program of studies, two course syllabi of Reading and Language Arts Methodology for Elementary Schools and Educational Psychology, and one student teaching assessment form. The student program of studies for the preliminary multiple subject teaching credential program lists admission requirements, recommended sequence of courses, co-requisites, and student teaching. The course syllabi provide examples of required and suggested field-based activities, for example:

Required Activity

1 a-i) Gather student data and assessment results, write a case study that accounts for instructional strategies. Include student learning needs, instructional strategies, and classroom management that support needs identified in the assessment result. Suggest further assessments to monitor student progress. Align with the local and state-adopted *English Language Arts Content Standards for [State] Public Schools* and the *Reading/Language Arts Framework for [State] Pubic Schools*.

Suggested Activity

1 a-ii) Candidate write a report or letter to be used at a meeting with a student’s family that communicate their child’s assessment results and includes suggested strategies for helping their child at home.

4. Discussion

4.1. Advantages of Applying Blended Learning at the Program Level

Data were collected from sources such as responses to open-ended questions in the

survey and interviews of students and faculty members to answer this research question. Students who participated in the survey perceived the convenience and flexibility of the program to fit working adults' schedule (including offering online and evening and weekend classes) as the predominant advantage of the program. Other top rated advantages of the program include the quick

pace to complete the program, the high quality of classes, and the experienced instructors in the program. During the interviews, teacher candidates and faculty members specified the advantages of the teacher education program. Both teacher candidates and faculty members reported the convenience, quality, quick pace, flexibility, and accessibility as their program's advantages (see Table 8).

Table 8. Reported Advantages from teacher candidates and faculty.

<i>Survey</i>	<i>Teacher Candidate Interviews</i>	<i>Faculty Interviews</i>
Convenience and flexibility of the program	Convenience and flexibility of the program	Convenience and accessibility of online courses for students
Quick pace	High quality of the program due to its practical curriculum and experienced instructors	Quick pace and concentrated learning experiences
High quality of classes	The quick pace of the program	Flexibility for faculty schedule
Experienced instructors		

The results from analyzing different data sources triangulate and supplement findings for the perceived advantages of applying blended learning at the program level. The programs' convenience, flexibility, and accessibility are the most commonly perceived advantages. Other advantages include the quick pace to finish, concentrated learning experiences, high quality of the curriculum, and qualified instructors who have extensive experiences in the field. Graham (2006) stated the benefits of blended learning as possible improved pedagogy, increased access and flexibility, and increased cost-effectiveness. Results from this study support the claimed benefits for applying blended learning in teacher education at the program level. Coherent and balanced curriculum and quality

faculty are the core components of Levine's (2006) nine-point template for judging the quality of teacher education programs. Based on analysis of different data sources, teacher candidates and faculty consider their program of high quality in addition to its convenience, flexibility, and accelerated pace.

4.2. Challenges of Applying Blended Learning at the Program Level

The most commonly perceived disadvantages reported by teacher candidates who completed the survey included: (a) the program is too expensive, (b) some instructors were irresponsive, (c) some courses lack quality, (d) online classes lack personal interaction, and (e) the workload for studying

*A Case Study of Applying Blended Learning
in an Accelerated Post-Baccalaureate Teacher Education Program*

may be overwhelming due to the speed of program. Students further communicated the disadvantages during the interviews. Perceived disadvantages reported by faculty members include the overwhelming teaching work load, challenges in administrating and supervising

field experiences, challenges of teaching online due to the time-consuming preparation, difficulty to present some content information, and instructors' need to be available to students constantly (see Table 9).

Table 9. Reported challenges of the blended teacher education program

<i>Survey</i>	<i>Teacher Candidate Interviews</i>	<i>Faculty Interviews</i>
Expensive cost	Some online classes lack of personal interaction with the instructor and other students.	Teaching may be overwhelming due to the quick pace of courses and the program.
Irresponsive instructors in some courses		
Lacking quality of some classes	The online program could be disadvantageous for some learning styles.	Teaching online is challenging.
Lack of personal interaction in online classes		Administration and supervision of the integrated field experiences is challenging.
Overwhelming workload		

From summarizing results of analyzing data from both teacher candidate and faculty perspectives, two major perceived challenges may be concluded:

Teaching and learning may be overwhelming in an accelerated blended learning teacher education program due to its intensiveness. The one-month courses in this case require instructors and students to fully concentrate on their tasks. Teaching online is challenging due to the time-consuming preparation, difficulty to present some content information, and requirement for instructors being available 24x7.

Online learning in teacher education is challenging due to the lack of personal

appearance and real-time contact in online classes, possibility of unresponsive instructors, lack of social networking opportunities, possible technical difficulties, and lack of self-motivated, self-disciplined, and self-directed learners.

The findings on the challenges support other researchers' claims that great challenges exist for implementing blended learning (Christensen, 2003; Graham, 2006). Previous research findings show the challenges of applying online learning in teacher education such as the lack of direct student-instructor and student-student interaction, possible content diminishment due to the emphasis on technology-enhanced tasks, and difficulties caused by students' lack of technological

skills (Beard & Harper, 2002a; Hughes & Hagie, 2005; Steinweg et al., 2005; Stephen & Barford, 2005). Findings from this study indicate that many of the challenges of online learning still exist in blended learning teacher education programs.

4.3. Wise Practices of Applying Blended Learning at the Program Level

Teacher candidates and faculty reported the best practices they experienced in their

blended learning programs (see Table 10). In the survey, teacher candidates reported reasons why they chose the teacher education program. The top five reasons are the program's quick pace, the flexibility of class schedules, the convenience of online classes, others' recommendation of the program, and the close-by locations of the program. These five reasons coincide with the reported best practices of the program from teacher candidate and faculty interviews.

Table 10. Reported wise practices of the blended teacher education programs

<i>Survey</i>	<i>Teacher Candidate Interviews</i>	<i>Faculty Interviews</i>
Quick pace	The convenience and flexibility of the program allow increased access to teacher education	Increased access to the program by offering all courses online year round and providing online services
Flexible schedule		
Offering online classes	The program provides students with concentrated learning experiences in the one-month classes	Integrating field experience in each course
Others' recommendations		
Close distance of satellite campuses	Maintaining high quality of the program through recruiting experienced and responsive instructors and having a practical curriculum	Recruiting dedicated teaching-focused faculty with extensive experience in the teaching profession.
		Designing sound and consistent online courses

In summary, the wise practices as reported in the survey and interviews include: (1) the blended learning programs are highly convenient and flexible with the availability of online classes, satellite campuses, and convenient scheduling of classes; (2) field experiences are integrated in the programs; (3) the one-month course format promotes

concentrated learning and efficiency; and (4) the programs maintain high quality through recruiting qualified faculty, offering a practical curriculum, and designing sound and consistent online classes.

Incorporating more and early fieldwork experiences is listed as one of the indicators

for an effective teacher education program (Korthagen & Kessels, 1999; Levine, 2006). Candidates should gain adequate experiences in order to understand theories (Korthagen & Kessels, 1999). Russell and McPherson (2001) called for collaboration of all involved parties for teacher preparation and connection of theory and practice of an induction model to focus on learning from experiences. Whitney, Golez, Nagel, and Nieto (2002) suggest that an effective teacher education program needs to form close collaborative partnership with schools and incorporate more and earlier fieldwork experiences. The integrated field experience approach allows teacher candidates to start their field experiences earlier and obtain sufficient practice from the program. It also forces a face-to-face meeting with supervisors when in the field to strengthen candidates' interaction with their supervisors.

4.4. Suggestions for Applying Blended Learning at the Program Level

Findings from this study indicate that teacher candidates perceive the application of blended learning as a complex process involving aspects of instructor-student and student-student interactions, practices in curriculum, learner control, faculty supervision, and effective online learning. Teacher candidates prefer applying blended learning at the program level instead of course level, but in favor of enhancing real-time interaction through using interactive online technologies. Faculty members suggest that distance teacher candidates should physically visit sites or conduct online synchronous meetings with faculty members during their program of study, utilizing technologies such as video conferencing and mobile devices (Shen, Wang, & Pan, 2008) for real-time synchronous interaction with the instructor and peers for distance students.

Based on the wise practices reported in this study, five suggestions for applying blended learning in teacher education at the program level are provided as the follows:

- 1) Determine the scope of application: It is important for administrators and faculty to review their goals, evaluate their capacity and resources, and analyze the needs of their students to determine the scope such as the number of online students the program may serve, the number of classes to be available online and face-to-face on site, and the opportunities for state-level or national-level teacher licensure. Davis and Fill's (2007) suggestion of designating professional instructional technologists for effectively implementing blended learning should also be taken into consideration.
- 2) Redesign classes for online environment: Offering all or some of the courses online does not simply equal copying the syllabi and assignments online. Learning activities need to be modified or re-designed to suit the online environment and students' different learning styles. At the same time, online classes need to keep consistent with face-to-face classes to ensure the program quality. Bunderson (2003) proposes to view blended cases as design studies with an iterative process of implementation, to focus on adaptation to individual needs, and to utilize validity-centered design to improve the measurement instruments, instruction, adaptation, and implementation plans. These frameworks help guide the design and redesign of courses and programs when applying blended learning in teacher education.
- 3) Integrate field experiences throughout the teacher preparation program: Learning from experiences is highly emphasized in teacher education (Korthagen & Kessels, 1999; Levine, 2006; Russell & McPherson,

2001; Whitney et al., 2002). The teacher education programs in this case study provide a good example of integrating field experiences throughout the programs. Such integration of field experiences ensures sufficient hands-on learning experiences for candidates both online and on site. Extensive student learning also needs to be arranged in order to enhance and expand candidates' learning from field experiences activities and practice what they learned from all courses.

- 4) Provide adequate and appropriate professional development for faculty: Results of this study indicate great importance of having experienced, knowledgeable, and responsive instructors in a blended learning teacher education program. In addition to recruiting quality instructors, teacher education programs need to establish a monitoring system to ensure each instructor and supervisor's performance, especially in online classes. "Just-in-time" and "just-for-you" professional development opportunities (White, 2007) are needed for instructors to improve their strategies for teaching online and their ability to use up-to-date technologies to increase personal interaction in online classes.
- 5) Be creative on course formats and offer good online services to meet candidate needs: Teacher education programs need to take innovative steps when applying blended learning. Courses need to utilize various formats to better serve current and potential students' need and still guarantee the quality of all courses. Online services are the interfaces in which distance students interact with instructors, administrator, supporting staff, and each other. It is important to provide extended online services for students to enroll in classes, seek advice, and solve technical problems.

4.5. Suggestions for Future Research

This study found that less collaborative learning occurs in the blended learning teacher education programs. For example, assignments in the education programs in this study are mostly designed as individual work, and there is no cohort for field experiences and student teaching. At the same time candidates in the programs regarded collaboration with others as important for their learning. King (2002) advocates that blended learning may present an opportunity to develop interactive and collaborative learning communities for pre-service teachers through overcoming the drawbacks of online instruction and minimizing the inconvenience of traditional face-to-face learning. Further study is needed to examine the influence of collaborative learning in blended learning programs.

Five domains of candidates' perceptions towards blended learning were generated from this study, most of which are interrelated (see Figure 2) to reflect the literature on blended learning in teacher education. Worth mentioning was that no significant relationships between students' perceptions of learner control and faculty supervision or between students' perceptions of practices in curriculum and faculty supervision were identified. Based on the data from the survey and interviews in this study, it had been possible that faculty supervision was not emphasized in the chosen teacher education programs. Further research studies are needed to confirm the hypothesized relationship among the domains of candidate perceptions.

5. Conclusion

The 2013 Sloan-Consortium® survey reports a total of 6.7 million students in higher education taking at least one online course (Allen & Seaman, 2013). Teacher candidates and faculty members in this study

were satisfied with their experiences in the blended learning programs. They believe that online learning can be as effective as face-to-face learning in traditional teacher education programs. The fact that more candidates completed their program online and their high satisfaction level with the online courses reflect the success of online learning and the blended learning programs. A conclusion can be drawn from this case study that it is viable and beneficial to implement blended learning in accelerated post-baccalaureate teacher education programs, employing both face-to-face and online learning and integrating field-based experiences.

The opportunities for teacher candidates to take classes and complete their program online, on site, or mix and match increase the convenience, flexibility, and access of teacher education programs. These enhancements open the door to the teaching profession for eligible candidates who are not able to attend traditional teacher education programs due to jobs, family, or other constraints. The increasing trend of online learning, the need to train quality teachers, and current budget constraints due to the economic crisis call for teacher education programs to be more engaged in exploring the possibilities provided by the rapid development of online technologies to improve the access, efficiency, and quality of teacher preparation through adoption of blended learning.

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