



# *A Mixed Methods Study of Preservice Teachers' Perspectives and Experiences with Blended Learning*

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*Olha Ketsman, Northern Illinois University*

## **Abstract**

*There is an increased need to examine how blended learning can be integrated in traditional preservice teacher education programs to support students' learning and meet the growing curricular demands of colleges and universities. This mixed methods study aimed to understand preservice teachers' perspectives towards blended technology integration courses that they participated in. Community of Inquiry Framework (CoI) and Activity Theory were used to design blended learning experience for students. Both quantitative and qualitative data were collected concurrently and merged in the interpretation phase of the study. Preservice teachers perceived blended technology integration course as a beneficial way to learn because it enabled them to spend their time effectively and efficiently allowing them to be more productive, independent, and self-regulated learners with opportunities to experience innovative learning firsthand. The study has implications for higher education faculty, K-12 teachers, administrators, instructional designers, and technology specialists*

**Keywords:** *preservice teacher; technology integration; blended learning; teacher education; perspectives; experiences; mixed methods*

## **Introduction**

Blended learning gained popularity as new low-cost technologies are becoming widely available in educational settings. Individual learning preferences change, and demands of everyday life play an essential role in how people access, process, and learn. Literature presents multiple definitions of blended learning. Bonk & Graham (2005) classified definitions of blended learning into three major groups of thought. Some authors define blended learning as a combination of instructional modalities and delivery methods (Bersin & Associates, 2003; Orrey, 2002; Singh & Reed, 2001). Some define it as a combination of instructional methods (Driscoll, 2002; House, 2002; Rossett, 2002). Others explain blended learning as a combination of online and face-to-face instruction (Reay, 2001; Roonney, 2003; Sands, 2002; Ward & LaBranche, 2003; Young, 2002). In this study, the author adopts the definition of blended learning provided by Horn and Staker (2014), according to which blended learning is a formal education practice in which students learn at least in part through online learning with some element of student control over time, place, path and pace.

More and more institutions, settings, and programs offer blended classes for their students. Research shows multiple benefits of blended learning for students. Previous studies discuss the

potential of blended learning to increase higher order thinking skills, provide a productive learning environment, and better manage daily responsibilities and learning (Garrison & Vaughan, 2008; Keengwe & Kang, 2013; Lzzio, Wilson, & Simons, 2002; Littlejohn & Pegler, 2007). Although multiple research studies on different aspects of blended learning in the classroom in K-12 and higher education settings are available, there is relatively limited empirical research on the blended learning approach in teacher education programs (Wang et al., 2009). The majority of research on blended learning examined nontraditional and graduate students (Martyn, 2003).

Clinical practice or field experiences are crucial aspects of teacher preparation programs. During this experience, teacher candidates are placed in a classroom and have a cooperating teacher mentor. The blended learning approach is an ideal instructional method during field experiences. It enables teacher candidates to fulfill field experience requirements. It reduces the number of hours that teacher candidates need to visit a physical classroom at the university campus to participate in a class. Therefore, when students are engaged in a field experience, blended learning offers an ideal setting that benefits teacher candidates (Duhaney, 2012; Reynolds & Greiner, 2006).

Another aspect of blended learning in the preservice teacher preparation context is changing workforce needs in K-12 education. Future teachers need to be prepared to teach in various environments and formats and learn pedagogy and instructional methods for blended teaching to develop and teach courses according to their students, schools, and districts (Kennedy & Archambault, 2012; Moore-Adams et al., 2016). Research shows that although many K-12 teachers are increasingly using technology in their classrooms for teaching and learning, few have formal preparation to design, teach and facilitate blended learning (Kennedy & Archambault, 2012; Moore-Adams, Jones & Cohen, 2016). Blended learning promotes active, student-centered, collaborative learning and may comprise multiple learning paths that provide opportunities for individualized learning (Johnson, Adams Becker, Estrada, & Freeman, 2015; O'Byrne & Pytash, 2015). Research states that to understand the principles and practices of blended learning, preservice teachers should experience blended learning for themselves and engage in a blended learning course to firsthand understand its benefits (O'Byrne & Pytash, 2015).

There is a need to empirically investigate the effectiveness of blended learning in teacher education, which can help decide on effective strategies for designing and implementing blended learning in teacher education programs (Keengwe & Kang, 2013). There is an increasing need to examine how blended courses can be utilized in traditional preservice teacher education programs to support students' diverse learning needs and meet the growing curricular needs of universities (Collopy & Arnold, 2009).

Traditionally technology integration courses are taught in face-to-face classroom settings. Preservice teachers who are working towards obtaining professional teaching licensure are required to complete a technology integration course. A technology integration course aims to introduce preservice teachers to the effective integration of technology into the classroom curriculum. Students design, develop, utilize, manage, and evaluate learning with the assistance of instructional media, technology tools, and software that helps enhance learning experiences in the classroom.

A large Midwestern university located in the suburban area where the study took place attracts many students who commute to campus, are employed either full or part-time, and often have families of their own. In addition, severe winter weather conditions often cause university closures and class cancellation in a long and cold winter season.

Motivation to redesign technology integration courses appeared due to a couple of important and convincing reasons. First, a belief that preservice teachers who are preparing to teach

in a K-12 environment increasingly need to experience blended instruction firsthand because it is likely that they will be teaching a blended course themselves once at a workplace. Second, the nature of specific technology integration topics lends itself better to a blended rather than a face-to-face format. For example, when learning about integrating distance learning tools or blended instruction into the classroom, students learn best when they experience it themselves firsthand. The third reason for a course redesign is an extensive clinical experience that preservice teachers need to engage in while enrolled in a technology integration course. Since students must be at the clinical experience several hours a day, they then need to commute back to campus often from school districts within a substantial driving distance, which can be challenging with suburban traffic. Finally, personal and family responsibilities and long commutes in severe weather may cause much stress and inconvenience for many students.

The purpose of this mixed methods study was to explore preservice teachers' experiences and perspectives towards the blended technology integration course required for teaching licensure. The research questions that guided the study are the following:

Quantitative:

1. What are students' experiences with blended technology integration courses?
2. What are the relationships between students' beliefs about using a blended format to teach technology integration courses and their experiences in such a course?

Qualitative:

1. What are preservice teachers' experiences in blended technology integration courses?

Mixed methods:

1. To what extent do the quantitative and qualitative data converge? How and why?

### **Theoretical Framework**

Community of Inquiry Framework (CoI) (Garrison, Anderson and Archer, 2000) and Activity Theory (Engeström, Miettinen, & Punamaki, 1999; Jonassen & Rohrer-Murphy, 1999; Lim & Hang, 2003; Roth, 2004) were used to design blended technology integration course. The CoI theoretical framework guided creating a blended learning experience by developing and implementing three interconnected and dynamic elements: social, cognitive, and teaching presence. CoI emphasizes critical thinking and collaboration and is a well-suited model for developing blended technology integration courses (Garrison & Anderson, 2003; Garrison & Vaughan, 2008). According to the CoI Framework, participants identify with the community, communicate purposefully in a trusting environment and develop interpersonal relationships by protecting their personalities and exhibiting social presence (Garrison, 2009). Examples of social presence in the blended technology integration course included encouraging reflective participation, addressing students by name, using salutations and inclusive pronouns, and recognizing different viewpoints, opinions,

and backgrounds. In the CoI Framework, learners show cognitive presence by constructing meaning through reflection and discourse (Garrison, Anderson, & Archer, 2001). Cognitive presence in a blended technology integration course was achieved by engaging students in projects and assignments that initiated an inquiry, problem-solving and searching for relevant information to develop a creative solution and focus on the construction of meaning reflectively. In CoI Framework, a teaching presence is created by designing, facilitating, and directing cognitive and social processes to realize personally meaningful and educationally worthwhile learning outcomes (Anderson, Rourke, Garrison & Archer, 2001). Teaching presence has a mediating role by gathering all the elements together in a balanced and well-structured fashion. Examples of teaching presence in a blended technology integration course included facilitating instruction and discourse to keep students interested, motivating and engaging them, clarifying misconceptions, and summarizing class discussions.

Activity theory was the second theoretical framework for designing a technology integration course (Karasavvidis, 2009). Activity theory states that environment shapes individuals' minds and activities, and context helps understand human interactions with the world (Kaptelinin & Nardi, 2006). Activity theory promotes contextualized activity, ongoing participation, and interaction within communities (Barab et al., 2004; Lantolf & Appel, 1994).

### **Literature Review**

The literature discusses research that focused on the effects of blended learning on student outcomes and achievement and students' perspectives and experiences with blended learning and elements of effective blended learning environments.

Research shows that blended learning positively impacts students' achievement (Lzzio, Wilson, and Simons, 2002). For example, López-Pérez, Pérez- López, & Rodríguez-Ariza (2011) found that blended learning increased passing rate on exams. Littlejohn and Pegler (2007) suggested that blended learning is beneficial for students because it changes the focus of learning design and encourages students to engage in active learning and contact between students and faculty and receive prompt feedback. Numerous research studies concluded that blended learning improves students' learning outcomes (Boyle, Bradley, Chalk, Jones, & Pickard, 2003; Dziuban et al., 2006; Garnham & Kaleta, 2002; Lim & Morris, 2009; O'Toole & Absalom, 2003; Twigg, 2003). Twenty out of thirty institutions that participated in research funded by the Pew Foundation in the United States reported having improved learning outcomes. Eighteen of the participating institutions demonstrated a decrease in student drop–failure–withdrawal (DFW) rates (Twigg, 2003). Twigg (2003) stated that students achieved higher grades, more robust knowledge, and enhanced understanding of the material in a blended classroom. Similar conclusions were made by López-Pérez et al. (2011). Garrison and Kanuka (2004) discussed how blended learning has transformative potential and supports active and meaningful learning. Other researchers revealed positive effects of blended learning approaches compared to traditional ones regarding student achievement across disciplines. Vo, Zhu, and Diep (2017) used end-of-course evaluations and found that the effects of blended learning on student performance in STEM disciplines were significantly higher than that of non-STEM disciplines. Fazal and Bryant (2019) investigated if blended learning increased 6<sup>th</sup>-grade student achievement in math and revealed that blended learning students outscored face-to-face students on state and district norm reference tests. Some studies did not find any significant difference in student achievement when comparing blended learning and other approaches. For example, Ünsal (2012) did not find a significant difference in post-test

scores between blended and traditional face-to-face groups and indicated that students demonstrated similar performance.

Some research focused on the perspectives and experiences of students with blended learning. Research showed that blended learning reinforced students' autonomy, research skills, and reflection by increasing flexibility of access to learning (Chambers, 1999; Lebow, 1993; Radford, 1997; Sharpe et al., 2006; Tam, 2000). It enhances students' ability to control their own learning pace and allows them to catch up on a course at their own pace (Garnham & Kaleta, 2002; Owston, Wideman, Murphy, & Lupshenyuk, 2008; Smyth, Houghton, Cooney, & Casey, 2012). Blended Learning promotes student satisfaction, enables them to become more motivated and involved in their learning, and enhances their perseverance (Donnelly, 2010; Sharpe et al., 2006; Wang, Shen, Novak, & Pan, 2009; Woltering, Herrler, Spitzer, & Spreckelsen, 2009). Some studies concluded that time management might sometimes be an issue in the blended course. Students may have unrealistic expectations and assume that blended learning is less work, and therefore may be struggling with time management skills and not accepting responsibilities for personal learning. Mitchell and Honore (2007) stated that learners' attitudes and motivation are particularly significant when virtual learning is involved, as those factors affect students' acceptance and participation in a blended classroom. It is crucial to managing students' expectations, especially since few face-to-face classes mean less work and encourage students to take more responsibility and autonomy over their learning (Tabor, 2007; Vaughan, 2007). Keengwe & Kang (2013) found that blended learning is more effective than fully face-to-face or online learning in terms of students' satisfaction (Dziuban et al. 2006; Wingard 2004), time and flexibility, ease of using resources, and interactions (Chamberlin & Moon, 2005; Lock, 2006). Karoğlu et al. (2014) emphasized a crucial aspect of a blended learning environment, fostering social interaction and feedback. Participants reported that blended learning facilitated their interactions with peers and teachers and enhanced group and peer learning in their study. Callopy and Arnold (2009) stated that blended learning could provide an opportunity for the continuation of discussion not completed during scheduled class time. Flexibility can support different learning styles and different speeds of cognitive learning. The material can be reinforced in various formats, which can increase interest and engagement, supporting the process of more effective learning. Duhaney (2010) reported that students liked the flexibility provided by blended learning and more control over the pacing of the course. The researcher stated that a blended environment implemented during teacher preparation coursework makes teacher candidates more likely to use various technologies and learn how to facilitate a learning environment in which students are actively engaged in learning using familiar technology tools. Chan (2019) aimed to understand students' perceptions of blended learning and suggested that student teachers need independent learning skills and the ability to construct knowledge in different educational settings to teach this to their students.

The literature discusses elements of effective blended learning environments and what contributes to their success. Research shows best practices of blended learning and elements necessary for successful blended learning implementation to take place. For example, Garrison and Vaughan (2008) discussed best practices of blended learning implementation in higher education and emphasized the importance of seamless integration of face-to-face and online components. In teacher education programs, blended learning is considered an effective method that can help improve student teachers' discussion skills, develop their communities of practice, and achieve their course goals (Means et al. 2009).

## **Methodology**

### **Type of Design**

This study used a convergent parallel mixed methods design to research perspectives and experiences of preservice teachers in blended technology integration courses. In this type of design, both quantitative and qualitative data receive equal weight and are collected concurrently (QUAN+QUAL) and merged in the interpretation phase of the study (Creswell and Plano Clark, 2011). Convergent parallel type of design draws on strengths of both quantitative and qualitative type of designs, compensates for their weaknesses, and allows to merge different but complementary data.

This study implemented several validation techniques. The researcher triangulated data to improve confidence in reporting findings by collecting data through online surveys that included quantitative and qualitative components (Hatch, 2002). Preservice teachers of different majors participated in the study, which was another triangulation technique in the study. Additionally, to assure the survey instrument's accuracy, face and content validity were conducted, and both experts and non-experts reviewed the survey.

Detailed and thick description of findings, a qualitative validation procedure applied in this study, helped readers to make their own decisions regarding transferability of findings to other learning settings (Lincoln & Guba, 1985, Merriam, 1988). The researcher's beliefs about blended learning did not influence data analysis in the study. Disclosing and clarifying biases is another validation technique recommended in the literature (Merriam, 1988).

### **Data Collection**

Data collection started after IRB has been secured. For this mixed methods study, the survey instrument was designed after a thorough literature review and expert validation process. Using experts to systematically review survey content to improve the overall quality and representativeness of scale items is essential in a survey development process (Polit & Beck, 2006). Feedback from content experts was collected to confirm that individual survey items are relevant and that critical items have not been omitted. The key areas that were assessed through an expert validation process were representativeness, clarity, relevance, and distribution. The survey consisted of 23 items focused on collecting demographic data, students' previous learning experiences and experience with blended technology integration courses, their perspectives on blended technology integration courses, and what is essential for the blended technology integration course to be effective. The survey instrument included a Likert scale (1 through 5) and open-ended qualitative questions.

A total of 114 preservice teachers who were enrolled in blended technology integration courses in a large suburban Midwestern university participated in the study and answered an online survey distributed through Qualtrics. Participation in the study was voluntary. Students were pursuing teaching licensure and preparing to be K-12 teachers. Participants of this study were preservice teachers enrolled in required technology integration courses at a large suburban Midwestern university. The majority of students (82 %) were between the age of 18 and 24. The rest of participating students were over the age of 24. The majority (81 %) of students were female, and 89 % were single and not married. Thirteen percent indicated that they have a dependent that lives with them in their household. Participating students mainly included seniors (52%) and juniors (44

%), with a small percentage (4 %) of post-baccalaureate students. The vast majority of students (90 %) were special education majors, and the minority (10 %) were secondary education majors.

Technology integration course exposes students to effective integration of technology into the curriculum, emphasizing design and evaluation of students learning utilizing technology. Blended technology integration courses were taught during a regular academic semester and included several in person monthly class sessions in technology laboratory settings and online asynchronous instruction during the remaining class sessions. Weekly modules included instructions for weekly assignments, readings, supplementary materials, technology tutorials designed by the course instructor and examples of assignments when applicable.

### Data Analysis

A convergent parallel mixed methods design seeks convergence and correspondence of results across different methods (Caracelli & Greene, 1993). Quantitative data were analyzed using SPSS statistical software. Measures of central tendency such as mean, median, and standard deviation determined preservice teachers' perspectives towards using blended learning in a technology integration course. Spearman Rho correlation was calculated to determine relationships between preservice teachers' experiences and perspectives towards blended learning in a technology integration course. Several survey items were grouped as a construct that describes preservice teacher experiences in a blended learning course. The factorial analysis provided information that these questions could be grouped together (KMO= .882, Bartlett test of sphericity=.000). Cronbach's alpha was .904.

Qualitative data included the response to five open-ended questions. The researcher identified text segments, assigned code words, used in vivo codes, collapsed codes into themes, and identified four themes. Four interconnected themes emerged. Quotes from participants were cited, and multiple perspectives of participants were described.

A convergent parallel mixed methods design implies that quantitative and qualitative data are analyzed concurrently but separately (Creswell & Plano Clark, 2011). In this study, statistical analysis of the quantitative data was performed concurrently with the qualitative data coding. Two data sets were merged in the second stage to develop a complete picture.

## Results

### Quantitative Results

Descriptive statistical analysis was conducted to answer research question one. Table 1 includes descriptive statistical results showing students' experiences.

**Table 1:** *Students Experiences with a Blended Technology Integration Course*

Survey Statement	Mean (M)	Median	SD
I had a positive experience with the blended technology integration course that I participated in	4.03	4	.796

Using blended format to teach technology integration courses allowed me to have a more productive learning experience	3.88	4	.888
Using blended format to teach technology integration courses improved my overall learning experience	3.91	4	.872
Using blended format to teach technology integration courses helped me to use my time more efficiently	4.12	4	.847
Using blended format to teach technology integration courses allowed me to take more classes towards my degree completion	3.70	4	.999
Using blended format to teach technology integration courses motivated me to study	3.48	4	1.001
Using blended format to teach technology integration courses enhanced my learning opportunities	3.85	4	.947

As evident from Table 1, preservice teachers had a positive learning experience in blended technology integration courses. The median of 4 shows that half of the students tended to have positive experiences towards blended technology integration courses.

Spearman rho correlation was used to answer research question 2. Data analysis revealed a significant correlation between students' beliefs about using a blended format to teach technology integration course and their experiences in such a course  $r = .715$ ,  $p < 0.01$ . Thus, students who had strong positive beliefs about implementing a blended format to teach technology integration courses tended to have more positive experiences participating in such a course.

**Table 2:** Correlation Matrix (includes correlation results obtained from the analysis)

Variables	Beliefs	Experiences
Beliefs n=114	1	.715*
Experiences n=114		1

\*Indicates that the correlation is significant at the 0.01 level, two-tailed.

Quantitative data analysis revealed that overall, preservice teachers tended to have positive learning experience in blended technology integration course and their beliefs were positively correlated with their experiences in such a course.

### Qualitative Results

Qualitative analysis revealed four themes focused on preservice teachers' experiences in a blended technology integration course. "In vivo" codes were used to name four themes.



***“At my Own Time.”***

Participants discussed time as the most crucial aspect of a blended technology integration class. Blended technology integration class allowed preservice teachers to work at their own time and schedule. Participants emphasized this aspect as being of prime importance for their educational experience. They extensively used the words “on my own time” when discussing learning in blended technology integration classes. For example, a participant stated: “The most beneficial aspect of the blended format was the ability to problem solve the different materials and work with them on my own time, not feeling rushed.” The other participant added: “Time was more my own. I could use it more efficiently in a blended format.” While yet another preservice teacher explained: “I could work on assignments when I had time rather than during class time. Blended format allows me to get more accomplished in a day.” Clearly, the ability and advantages of working on their own time were pivotal to preservice teachers’ experiences.

The time aspect provided flexibility in participants’ daily lives and allowed them to manage their everyday responsibilities outside of the classroom. Students mentioned saving time when it comes to commuting, taking more classes towards degree completion, and balancing work, school, and family responsibilities. For example, one participant stated: “Not having to make the 75-minute commute to campus allowed me more time to study.” Another one added: “It allows students to do other tasks, take other classes while still gaining knowledge from multiple.” Another preservice teacher elaborated: “I like that it allows students to manage their own time based on their schedules. It is hard to manage time since I live 45 minutes away and work part-time. Blended learning gives me more flexibility.” Flexibility was beneficial for students and helped them with self-monitoring skills. A participant stated: “I liked how my blended technology integration course offered more flexibility because I could control when and where I learned. It improved my self-monitoring skills.” Responsibility was another aspect mentioned by participants. Thus, a participant commented: “I think blended technology integration class is a great way to learn. It gives more responsibilities to students to manage their own time.”

Participants described opportunities to manage their own time, flexibility, and time-saving options as valuable characteristics of blended technology integration.

***“At my Own Pace.”***

Participants emphasized that “pace,” “productivity,” and “autonomy” were important factors when it comes to the blended format in a technology integration class. They discussed that working at their own pace allowed them to take as much time as they needed to complete activities and projects and made them more productive. One participant stated: “I was able to learn and complete the projects at my own pace. I did not have to work only during the designated class time.” Another participant echoed by mentioning: “I can be more productive and get more work done.” The ability to work at their own pace was associated with more autonomy. Thus, a participant explained: “The blended course allowed me to be more independent with how I approached the class and it allowed me to explore different technology at my own pace. It allowed me for more autonomy...” Participants appreciated opportunities to work at their own pace both independently and with peers and both in and outside of the classroom. A preservice teacher mentioned: “I like that learning takes place in and outside of the classroom. This allows me to complete assignments with peers and at my own pace.” When participants had opportunities to work at their own pace, they were more productive and independent. Productivity and independence were necessary for

their learning experience because they allowed accounting for individual learning styles, differences, and preferences and helped process information at the pace that worked for individual preferences and needs.

### ***“New Opportunities for Learning.”***

Participants discussed the design and delivery of the blended technology integration course. They commented on resources, tools, and real-life experiences that were important to ensure meaningful learning opportunities offered in the course. A participant commented: “For me, the blended format in a technology integration course not only changes how content is delivered but also redefines traditional educational roles and provides new learning opportunities.” Students commented on the “real-world experience” in a blended technology integration course, opportunities to engage with innovative technology tools and methods, opportunities to practice using new technology, and hands-on activities and interactions incorporated into the course. A participant stated: “I like a class that has a blended format. I am interested in technologies in the classroom. It provides a real-world experience since many of us do not get to use these technologies in our clinical placements.” Preservice teachers believed that hands-on activities and interactions were necessary for their learning experience in a blended class. A student commented: “The range of tools that was discussed and covered made every class and my experience enjoyable.” A balance of in-person and online instruction and opportunities to apply new knowledge was necessary for preservice teachers. A participant mentioned: “I like having weeks in which we learn in a hands-on way with our professor and then the next week we have individual practice.” Another participant elaborated on the application aspect of the blended technology integration course: “Being able to use the information that I am learning about technology and applying it to technology that I have at home.”

The instructor’s availability was a critical aspect for student success, especially during the online instructional mode. Students discussed the importance of receiving a quick response from the instructor and the instructor’s availability through email and meetings when students were seeking help and assistance. Thus, a participant commented: “I liked that the professor was readily available to assist via email or through personal meetings.” Preservice teachers emphasized that instructor presence and availability ensure their success in a blended technology integration course.

The final aspect of blended technology course design and delivery was the clarity and transparency of course expectations. A participant commented: “I like how the expectations for the course were laid out very clearly within the first few weeks. We all knew what we had to do to be successful in the class.”

Participants discussed real-life experiences, innovative technology tools and resources, a balance of instructional modes, instructor presence, and transparency of course expectations as essential aspects that contributed to successful experiences.

### ***“It is Hard to Stay Motivated.”***

Participants discussed motivation and self-management skills as aspects of a blended technology integration course that presented some challenges. Preservice teachers explained that it was hard to plan and get the work done, stay focused, keep on top of due dates for class assignments and stay motivated to do the work. They explained that this was because a blended course requires

strong self-management skills. For example, a participant commented: “I found that the most challenging thing was to force myself to focus and get all the homework assignments done.” While another student elaborated that the lack of motivation to work caused to miss due dates and deadlines: “It is challenging being motivated to do the work. It is easy to allow assignments to slip if you do not keep track of the due dates.” While still experiencing issues with self-management skills, some students believed that once they overcame this challenge, it was manageable: “The most challenging was to figure out how to plan and get my work done, but once I figured it out, doing the work was easy and not challenging anymore.”

Participants mentioned that sometimes they needed additional face-to-face instruction to stay motivated. For example, a participant commented: “It was hard to stay motivated. I need full-time instruction in a class to stay engaged.” Another added: “It is difficult to build relationships when a class does not meet in-person weekly.” Motivation was also related to the ability to see and meet peers during the weeks that the class did not meet in person, especially to work on group projects. Thus, a participant commented: “I found it challenging to find time to work on the group project outside of class that worked for everyone’s schedule.” While another one added: “It is hard starting projects when we do not see group members every week. I found the group projects to be challenging because we were not always meeting.”

Having immediate access to the instructor to receive an instant response when clarification was needed, or issues arose was another aspect of motivation in the course. Thus, a participant commented: “It was hard sometimes to motivate myself since asking the teacher’s questions usually takes longer.” Another one elaborated: “Sometimes questions come up, and your professor is not in the same room as you.”

Self-management skills, not having a face-to-face lecture every week, issues connecting with peers to work on projects outside of class, and immediate instructor access were all aspects of motivation and self-management in the blended technology integration course.

### **Discussion and Conclusions**

Results of the study revealed that preservice teachers had positive experiences and perspectives towards the blended format of the technology integration course. Combined quantitative and qualitative data were used to answer mixed methods research questions in this research: “To what extent do the quantitative and qualitative data converge? How and why? Table 3 shows converged quantitative and qualitative results and how qualitative themes complement quantitative survey items. For example, a quantitative survey item showed that students had a positive experience with a blended technology integration course ( $M=4.03$ , Median= 4) and was complemented by qualitative data themes. While qualitative themes complemented some quantitative items, other ones showed different perspectives. For example, the quantitative survey revealed that using the blended format to teach technology integration courses motivated students to study, as evident in relatively high descriptive statistic values ( $M=3.48$ , Median=4). However, the qualitative theme “It is hard to stay motivated” discussed students’ challenges in staying motivated in the blended course.

**Table 3: Mixed Methods Results**

Survey Statement	Mean (M)	Median	Qualitative Themes
I had a positive experience with the blended technology integration course that I participated in	4.03	4	<ul style="list-style-type: none"> <li>• “New opportunities for learning”</li> <li>• “At my own time”</li> <li>• “At my own pace”</li> </ul>
Using blended format to teach technology integration courses allowed me to have a more productive learning experience	3.88	4	<ul style="list-style-type: none"> <li>• “At my own time”</li> <li>• “At my own pace”</li> </ul>
Using blended format to teach technology integration courses improved my overall learning experience	3.91	4	<ul style="list-style-type: none"> <li>• “New opportunities for learning”</li> <li>• “At my own time”</li> <li>• “At my own pace”</li> </ul>
Using blended format to teach technology integration courses helped me to use my time more efficiently	4.12	4	<ul style="list-style-type: none"> <li>• “At my own time”</li> <li>• “At my own pace”</li> </ul>
Using blended format to teach technology integration courses allowed me to take more classes towards my degree completion	3.70	4	<ul style="list-style-type: none"> <li>• “At my own time”</li> <li>• “At my own pace”</li> </ul>
Using blended format to teach technology integration courses motivated me to study	3.48	4	<ul style="list-style-type: none"> <li>• “It is hard to stay motivated”</li> </ul>
Using blended format to teach technology integration courses enhanced my learning opportunities	3.85	4	<ul style="list-style-type: none"> <li>• “New opportunities for learning”</li> <li>• “At my own time”</li> <li>• “At my own pace”</li> </ul>

Convergent parallel mixed methods design allowed to draw on strengths of both quantitative and qualitative data and to make comprehensive conclusions about the studied issue based on the collected data (Creswell and Plano Clark, 2011). This study revealed that preservice teachers had positive perspectives and experiences with the blended technology integration course. They

perceived the blended approach as a beneficial way to learn because they can spend their time more effectively and efficiently, allowing them to be more productive, independent, and self-regulated learners with opportunities to experience innovative learning firsthand. Previous literature on the topic supports such findings (Alonso, Manrique, Martinez, and Vines, 2011; Ausburn, 2004; Drysdale et al., 2013; Ketsman, 2019).

Participating in the blended technology integration course allowed preservice teachers to be a part of three interconnected elements which are a focus of the Community of Inquiry Framework: social, cognitive and teaching (Garrison & Anderson, 2003; Garrison & Vaughan, 2008). Preservice teachers experienced reflective participation, constructed meaning through discourse, became engaged in projects and activities that promoted inquiry and problem-solving and participated in meaningful learning outcomes emphasized in Community of Inquiry Framework (Garrison, 2009; Garrison, Anderson and Archer, 2000; Garrison & Vaughan, 2008). In addition, preservice teachers experienced contextualized activities, ongoing participation and multiple interactions within the community of learners that they were a part of, which is consistent with the concepts of the Activity Theory (Engeström, Miettinen, & Punamaki, 1999; Jonassen & Rohrer-Murphy, 1999; Lim & Hang, 2003; Roth, 2004).

The study has implications for higher education faculty, K-12 teachers, administrators, instructional designers, and technology specialists who consider teaching and designing blended learning experiences. It will help them when making decisions regarding the design and delivery of such courses on their campus. Policymakers and stakeholders will benefit from the study when deciding on implementing policies and providing funding for new and emerging technologies that can be further integrated into blended learning environments.

Limitations involving generalizability may be characteristic of this study. The literature recommends using random sampling to select participants for quantitative data collection; however, this study used non-random sampling. Self-reported data is another limitation of this study because it can seldom be independently verified (Chan, 2009). These factors should be considered when reviewing the results of the study.

Future research could consider replicating the findings of this study by selecting a larger sample size for quantitative data and conducting one-on-one interviews and focus groups with the participants to collect qualitative data. Another area of future research can focus on comparing two technology integration courses taught by the same instructor, one face-to-face and another blended. It would be beneficial to study the issue of motivation across student coursework and explore if the motivation is different when it comes to blended coursework compared to face-to-face. More research is needed to explore characteristics that make practical blended technology integration courses.

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**Olha Ketsman, Ph.D.** is an Assistant Professor at the Department of Educational Technology, Research and Assessment at Northern Illinois University. Her research focuses on issues related to technology integration, teacher education, teaching and learning, instructional design and mixed methods research. She teaches graduate and undergraduate courses in instructional technology and research methodology.