

# Prospective Teachers' Experiences of Blended Learning: Challenges and Opportunities

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**Abstract:** *In this study, which used qualitative methods, 22 pre-service teachers who had no previous experience of learning in a blended learning environment represented the study group. Blended learning, a combination of face-to-face and online teaching environments, was applied to the participants' physics classes for twelve hours over three weeks. Participants' opinions about blended learning were obtained in focus group interviews conducted after the administration. The pre-service teachers provided a broad perspective as they looked at the issue from the perspective of both students and future teachers. The research findings highlight the potential difficulties and opportunities for blended learning. Two blended learning models emerged in line with the pre-service teachers' suggestions. The models were designed to overcome potential challenges and reflect the advantages of blended learning in teaching environments. These models can be used for different needs of different groups of students.*

**Keywords:** *Blended Learning, Candidate Perspectives, Face-to-Face Learning, Pre-Service Teachers' Opinions, Online Learning*

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## I. INTRODUCTION

The integration of technology into education is very important today. One of the successful approaches to achieve this integration is Blended Learning (BL). Blended Learning offers the opportunity to benefit from web-based resources while preserving the advantages of traditional teaching methods. BL has transformed teaching and learning processes by combining face-to-face (F2F) teaching with online (OL) teaching. This approach is rapidly changing teaching and learning methods, especially in higher education. It is necessary to examine the theoretical foundations of BL and work on this method to achieve effective results in practice (Anthony et al., 2022; Hiğde and Aktamış, 2021; Garrison and Kanuka, 2004).

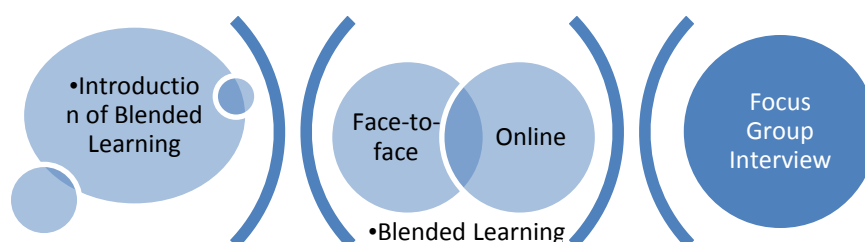
BL offers students flexibility in terms of time and space, allowing them to access lessons whenever and wherever they want. This flexibility is a great advantage especially for working students, students with disabilities or students living in remote areas (Hiğde and Aktamış, 2021). In addition, BL provides students with easy access to different learning materials. It allows students to actively use different technologies such as interactive simulations and multimedia tools in the teaching process. The student-centred structure promotes learning (Chiu, 2021). Students can engage in interactive activities on online platforms. They can collaborate on projects and improve themselves in productive discussion environments. Technology-enabled tools provide enriched experiences for students. These experiences lead students to take responsibility and direct their learning (Yılmaz and Malone, 2020).

BL can be used with many approaches such as constructivist learning by focusing on the integration of teaching and learning in various aspects (Atmacasoy and Aksu, 2018; Kumar et al., 2021). BL, in which strategies such as problem-based learning are used in the teaching process, contributes to the multifaceted development of students (Hiğde and Aktamış, 2021). This approach helps students to develop 21st century skills such as complex problem solving (Trilling and Fadel, 2009), critical thinking (Garrison and Vaughan, 2008), communication and collaboration (Hrastinski, 2019; Trilling and Fadel, 2009). In their meta-analysis studies, Vo et al. (2017) show that BL has positive effects on course outcomes in terms of academic success. In this system, students have the opportunity to progress at their own pace. In addition, students can improve their cognitive skills by working with more talented and knowledgeable individuals through social interaction (Dreyfus, 2009).

It has been found that students' perceptions of the BL environment are generally positive and that this method makes students' learning processes more efficient. However, there are also some difficulties. For example, it was noted that there are technical problems in online environments, such as Internet access problems and disconnections. Another difficulty has been mentioned as the concerns of some pre-service teachers regarding the use of information technologies (Atmacasoy and Aksu, 2018; Yılmaz and Malone, 2020). Despite these difficulties, BL is gaining importance as a pedagogical approach that offers various benefits to students. However, it has been emphasised that there is a paucity of research on the adoption and implementation of BL and that more work should be done in this area (Anthony et al., 2022). The effective implementation of BL is closely related to the adoption of BL by pre-service teachers, who are the future teachers. Therefore, pre-service teachers' perspectives on BL and what they think about the use of BL in teaching processes are important.

## II. METHODS

This study aims to describe the thoughts of prospective teachers (PT) who have experienced blended learning for the first time. This research was conducted using qualitative methods. The study group was selected using purposive sampling. Participants were selected on a voluntary basis from prospective teachers who had previous experience with online education but no BL experience. The study group consisted of 22 pre-service teachers studying at the Faculty of Education of a state university in Türkiye. The teacher candidates are between 22 and 25 years old. Before the study started, the necessary permissions were obtained from the university where the study would be conducted. The study was approved by the ethics committee. Informed consent was obtained from the participants. The study procedure is illustrated in Fig. 1. As the trainee teachers had no information about BL, they were first informed about it. Then, for 3 weeks, a total of 12 hours of BL was administered, 2 hours F2F and 2 hours online each week in the physics classroom. After the administration, focus group interviews (FGI) were conducted to find out the pre-service teachers' thoughts about blended learning. A total of four FGIs were conducted. In all FGIs, the interviews were audio-recorded with the consent of the participants.



**Figure 1.** Steps of the research process

The FGIs were planned and conducted according to the time available to the participants. There were 8 PTs in the first group, 9 PTs in the second group, 3 PTs in the third group and 2 PTs in the fourth group. All FGIs were conducted by the same researcher. All groups were asked the same sequence of questions. To ensure reliability, the researcher took notes for analysis during the FGI. The researcher read the notes to the participants and asked questions such as “Do these statements accurately reflect your opinion?” Care was taken to obtain the agreement of all participants. Participants' identities were kept confidential. For the analysis, each participant was given codes such as PT1, PT2.

The researcher transcribed the FGI audio recordings. The data was first organized. Then, code-category-theme analysis was conducted. The analysis was completed in three stages. In the first stage, the researcher listened to the audio recordings and checked the transcripts. In the second stage, analyses were conducted on the codes. In the last stage, the researcher listened to the audio recordings again and checked the analyses.

## III. RESULTS

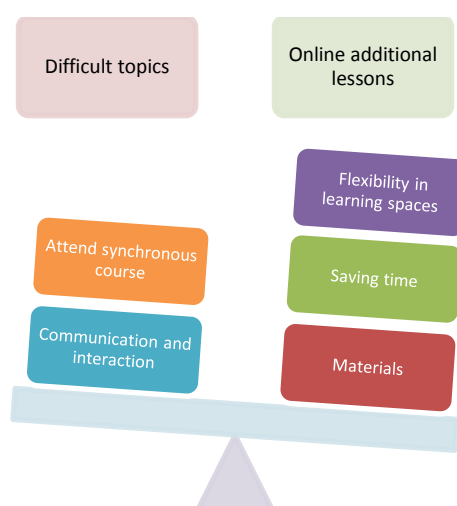
Prospective teachers' views on their BL experiences were elicited. In the FGI analyses, it was observed that prospective teachers compared BL, F2F and OL teaching environments with each other. In this context, the results of the analyses were presented under four themes. A perspective of BL, advantages of F2F over OL, advantages of OL over F2F, challenges and opportunities for BL, and BL for the instruction of physics.

When pre-service teachers talked about BL, they mostly considered the process in two parts as F2F and OL. When defining the BL environment, they compared it with their previous F2F and OL experiences. PT4

expressed his thoughts on this topic as *"Blending, that is, processing online education and face-to-face education together, but I am on the face-to-face side of this business. Online education is a concept that is a bit far away for me"*. Although most of the participants expressed the concepts of F2F and OL together as a definition of BL, they considered the two teaching environments as completely independent when giving explanations. Most PTs stated that they would not use BL when they became teachers. All PTs who shared this view explained these thoughts in relation to OL. PTs stated that they did not want BL because OL was not effective in this regard, they were worried that students would not understand what they were saying in OL, and they thought they would have problems with communication. In a teaching environment where the technological resources are adequate and there are no technological problems, PT10 explained, *"In face-to-face education, peer teaching is also part of the process. In distance education we cannot catch up with that"*. Although the majority wanted F2F education, some PTs stated that this situation could change with the improvement of OL environments and the spread of good BL examples. PT14, who shared his opinion on this issue, said: *"As a process, ninety percent prefer face-to-face education, but for example, if we now move to hybrid education as distance education over time, as more time passes, everyone will gradually get used to it. That is, their perspective on online education may change. Adjustments and so on are being made, and teachers may explain better over time"*.

In all focus group discussions, when talking about BL, the PTs brought up the issue of preferring F2F to OL. Although no questions were asked on this topic, it was observed that they were willing to talk about the advantages of F2F over OL. Some PTs stated that F2F was more understandable and easier, more efficient and more permanent than OL. Other participants in the interview group stated that they agreed with their friends on this point. This situation was similar in all groups. Some PTs stated that F2F was more advantageous than OL in terms of maintaining discipline in the teaching environment. PT21 said: *"I definitely cannot get the discipline in online learning that I get in face-to-face. (OL) It is much more comfortable"*. PT17 has claimed that online learning leads students to laziness. In the other group where F2F and OL were compared in terms of discipline, PT13 gave the following example of 'being comfortable': *"We have a lesson at 9 in the morning. I wake up at 7 in the morning, get ready, go to school and do my lesson. But with online learning I say to myself 'I'll look at it later' and then I just lie down and go to sleep"*.

Although the majority of the discussions in all FGIs focused on the advantages of F2F, some PTs also mentioned the advantages of OL compared to F2F. They stated that OL was more advantageous in terms of visibility and the use of tools such as videos and simulations. Some PTs said that the use of technology was beneficial for their future career. Some also stated that OL was advantageous in terms of being able to access the lesson whenever they wanted and being able to watch the lesson over and over again as the lessons were recorded. Some also stated that it saved time. PT22 said: *"We did not come to school for a single lesson, online was good"*.

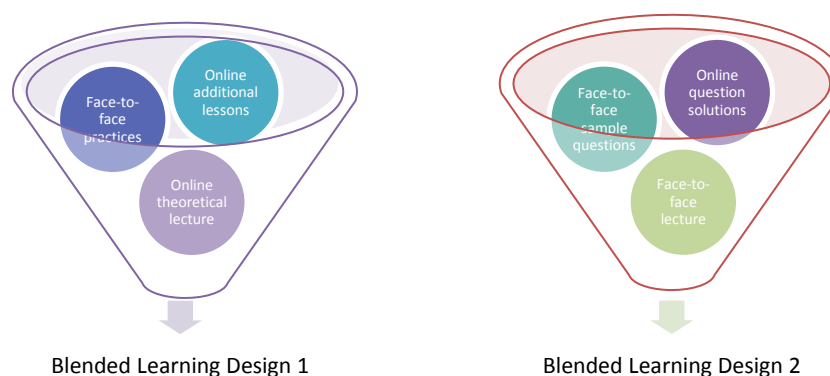


**Figure 2.** Blended learning challenges and opportunities

The PTs proposed different combinations of F2F and OL for BL. When these proposals were examined, possible difficulties and opportunities for BL emerged. The anticipated challenges and opportunities for blended learning are presented in Fig. 2. It was stated that there might be difficulties in the online part of BL in terms of communication and interaction in the classroom. To overcome this, the PTs stated that BL online lessons should be synchronous, and everyone's cameras should be on. PT9 explained: *"I think we should turn on the camera in distance learning. This way there is better interaction between teacher/student and*

student/student". Another difficulty mentioned was that there may be students who cannot attend synchronous classes for various reasons. It was stated that synchronous lessons should definitely be recorded for this situation. It was emphasised that explaining difficult topics and problems that require long term numerical operations in an online environment makes it more difficult for students to understand the subject. It was stated that difficult topics and problems with long operations should be explained face to face. They stated that when they present in an online environment, they only focus on their own topics and usually do not understand anything from their friends' presentations, which is not the case in face-to-face presentations.

PTs stated that BL can be designed in such a way as to save time. It was stated that in the BL system, additional lessons can be given online in cases where the subjects are not sufficient in face-to-face education. PT3 stated that *"Blended learning can provide convenience in places where face-to-face education is not sufficient or when the necessary materials are not available in the classroom environment or cannot be brought"* and that in cases where materials are not available in the classroom environment, this can be compensated by online education. Some PTs stated that BL, where verbal lessons (literature, history, etc.) or theoretical parts of numerical lessons (physics, chemistry, mathematics, etc.) are given online and practices such as experiments are done face-to-face, could be more useful. PT7 said: *"It can be a mixed system, but simulations or experiments, activities can be online. I am in favour of doing theoretical courses face to face"*. Most of the other PTs in the group said that they agreed with their friends on this issue. Some PTs insisted that the subject explanation should be face-to-face. PT1 said: *"I think if a subject is explained to the student for the first time, it should be face to face because I think that learning something from scratch in online education is not very efficient"*. Another design suggested for BL is a system where the subject is explained face-to-face and the questions are answered online. Some PTs stated that it would be better if the sample question solutions were done face-to-face and the additional question solutions were done online. PT's suggestions for designing the blended learning are illustrated in Fig. 3.



**Figure 3.** Prospective teachers' proposals for blended learning design

In all four FGIs, participants gave short answers to questions related to the physics course in which the BL application was conducted. It was observed that the majority of PTs shifted to comparing F2F and OL environments when talking about the physics course where the application was conducted. It was observed that PTs evaluated the BL application by comparing the physics courses that were only F2F with the physics courses that were only OL that they had previously experienced. Most of the PTs were negative about the use of BL in physics courses. They emphasised that physics courses should be F2F. The reasons for this were mostly attributed to the difficulty and complexity of the course. It was stated that physics courses are courses that require concentration, and it was emphasised that it is difficult to concentrate in OL. In addition, there were PTs who stated that physics problems required a lot of calculations and that they found it difficult to understand the problem solutions in OL.

#### IV. CONCLUSION

BL administrations are the need of the future in educational sectors. The results of this study are useful to determine more effective and efficient BL requirements and to identify the difficulties. The current study focused on determining the thoughts of PTs on BL administrations. Most of the participants combined the concepts of F2F and OL under the title of BL. On the other hand, it can be seen that they compared the two teaching environments independently when giving explanations about BL. This situation may be due to the pre-service teachers' previous teaching experiences. Because it was the first time they experienced these two different teaching environments together in the same course. The PTs were not used to combining F2F and OL.

As the participants stated, using more good BL examples in future teaching environments will enable teachers and students to adopt the combined of F2F and OL environments. However, it is noticeable that the number of PTs who expressed their opinion on this issue is low.

In this study, the BL application was carried out in a physics course. It is understood that most of the participants find F2F teaching more suitable for physics courses. It is thought that F2F and OL experiences prior to BL application have an impact on PTs' perceptions. Looking at the results, it can be seen that PTs mostly express the difficulties and negativities they experienced in their OL experiences. They clearly stated that they would prefer to be in a F2F teaching environment both as students and when they become teachers. They said that they would not choose OL unless they had to when they became teachers. A review of the literature shows that there are many studies that find that teacher candidates prefer F2F teaching environments to OL (Adnan and Anwar, 2020; Baran et al., 2011; Kaufmann and Vallade, 2020; Paechter et al., 2010). Considering the increasing role of computer and internet systems in educational technologies, this situation is worrying.

It is understood that the reasons why PTs prefer F2F to BL are mostly related to the online part of the education. It can be said that PTs believe that teacher-student and student-student interaction is limited in the online environment and this is the result. Kaufmann and Vallade (2020) show that students often feel lonely in online environments. It was found that communication and interaction in OL environments is an important issue to consider for a healthy education. There is a need for in-depth research on how to ensure effective communication in OL environments.

PTs highlighted the use of inaccessible materials in the classroom as one of the opportunities offered by BL. In their study, Atmacasoy and Aksu (2018) identified the provision of different materials in BL as one of the advantages of this system. The PTs stated that BL would be particularly beneficial in cases where course content or applications are not sufficient. Here, it was emphasised that it would be beneficial to provide additional courses in online environments, where everyone can participate in the course from their own environment, outside of formal learning hours. The ability to use both face-to-face and online environments as needed was seen as an opportunity offered by BL. Kumar et al. (2021) noted that BL has become popular in many universities because of this flexibility.

The PTs suggested BL models for using online and face-to-face environments together efficiently. It was stated that it would be better to give all verbal courses such as history and geography or theoretical parts of numerical courses such as physics and chemistry online. It was suggested that applications such as experiments should be done face-to-face for a BL system where the theoretical parts of the course are online. This BL model includes additional online courses as a complement. In another BL model suggested by the PTs, they stated that it would be better to give subject explanations and applications face-to-face and solve questions online. It was emphasised that subjects that students encounter for the first time in the teaching process, especially difficult and complex subjects, should be explained face-to-face. It was emphasised that for this model it would be better to solve sample problems in face-to-face classes. These two BL models emerged from the experiences of the participating PTs. It is believed that implementing BL designs proposed by PTs and discussing their outcomes would be beneficial for improving educational experiences.

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