**Collaboration**

* Some researchers have suggested that the use of ICT will eventually change teaching practices towards more collaborative learning (Dillenbourg 1999; Scardamalia and Bereiter 1994)

**Timely Feedback**

The online component of blended learning allows for timely feedback which is vital for engagement. The pre-service teachers. The pre-service teachers favoured blended learning over exclusive online distance learning or traditional instructions since prompt feedback encouraged regular studying and rapid correction of mistakes.

[[Blended learning at pre-service teacher education in Turkey: A systematic review// Atmacasoy, Abdullah Aksu, Meral]]

**Face-to-Face and Online**

Most learners value both the wealth of interactions in a face-to-face environment and resilience, convenience and reduced opportunity cost of online learning. [[Graham 2013]]

**Pleasant and adaptable learning experience/interesting**

Pre-service teachers felt the learning experience pleaseant and adaptable

**[Dos 2014] ; [MP4];**

Use of Moodle-based LMS for delivering the PBL course made it more interesting.

**[MP-1]**

**Preference to blended learning**

Collopy & Arnold 2009; Fareley, Jain & Thomson (2011); Huang (2016)]

Expressed a positive attitude towards blended learning in general. Opportunity for interactions and quality of interactions were an aspect that the respondents did not perceive to differ significantly between blended and traditional learning.

[**MP-3**]/ [Le & Pham];

**User-friendly/Easy/Time-saving**

Learning became easier, practical, -- over Moodle.

**[MP-1]**

**User-friendly**

The course helped majority of the respondents to be effective, productive and gave them more control over the learning activities. They appreciated the user-friendliness, simplicity, ease of use, flexibility and consistency of the e-learning course. It provided the teacher trainees with a pleasant learning experience as they became skilful learners quickly. [MP5];

**Time Saving**

**[MP-1]**

**Workload**

-Online instruction contributed rather significantly to the overall workload in blended subjects [MP3]

-Many participating student trainees wanted to restrict online instruction to 50% [[MP3]]

**Technology-Positive**

The participants were satisfied with technological functionality. **[Le and Pham]; [MP3];**

**Technology-Difficulty**

A few participants experienced Moodle as complicated and confusing **[MP-1]**

**Experience in technology**

Students’ positive experience with blended learning tended to increase inline with greater exposure and functionality with it.

[Le and Pham]; [MP3];

**F**requent computer engagement as a factor determining IT competence of the pre-school teachers. The study also found the IT competent pre-service teachers are interested in computer-assisted instruction and they had a positive intention of technology acceptance

[MP2]

The study by Cox et al. (1999), for instance, showed that teachers who are already regular users of ICT have confidence in ICT use, perceive ICT to be useful for their personal work and teaching, and plan to extend their use further in the future.

In a survey of 764 teachers, Wozney et al. (2006) revealed that there was a strong connection between teachers’ use of technology and their confidence. These results are in line with the European Union study (2013) showing that teachers’ confidence levels in their operational ICT use can have a potential influence on how often teachers use ICT-based activities in their teaching

**Technology in Curriculum**

The study suggested incorporating activities that enhance frequent computer engagement in the curriculum to make the pre-service teachers more IT competent. They need training in technological innovations and how to use technologies for teaching and individual development.

[MP2]

**IT Support/Training**

* -There is need for pedagogical support in their work with ICT
* the technophobia of the teacher trainees decreased with their ICT experience and computer-related self-efficacy perceptions increased. It will help in developing the readiness of benefitting from technology in the education process by increasing their technical competence.

[Mishra & Mehta 2017; Sumardi et al 2020;MP6]

* Integrating the PBL course on Moodle helped the participants gain awareness about the new IT.

[MP1]

* Professional development programmes or teacher training have been found to play an essential role in promoting teachers’ confidence (see Ertmer and Ottenbreit-Leftwich 2010 for a review). Teachers who received ICT training tend to be less anxious and more confident in their ICT use, and usually value ICT more highly (European Union 2013)

**Lack of IT skills**

* Studies reported a lack of IT skills among the teachers and teacher-trainees.
* Participants had low or moderate/high-level technophobia tendencies.

Bardakci, Alakurt, Akyuz and Samsa (2010)/ In [MP-6]

* Researchers have shown that only few teachers were satisfied with their knowledge and skills in working with digital technologies in the classroom, and they were not prepared to integrate the promotion ofmandatory digital competence into their practice

(Brigas et al. 2016; Pittman and Gaines 2015) [in MP 7].

* Even when some teachers integrated digital competence into their work, researchers found that their integration of digital technologies was rather limited to a basic level and for demonstrative purposes

(Brigas et al. 2016; Aslan and Zhu 2016)/ [in MP 7].

**Attitude/Beliefs**

* A review of the literature (Ertmer and Ottenbreit-Leftwich 2010;Mumtaz 2000) shows that attitudes towards technology and confidence in ICT use are significant predictors of teachers’ use of technology.
* Teachers’ attitudes towards technology can also be regarded in terms of their perception of the usefulness of technology (Instefjord and Munthe 2017; Teo et al. 2016). Teo et al. (2016) defined the perceived usefulness of technology as the degree to which teachers believe that using technology could enhance their performance in teaching.
* Previous studies revealed that teachers who are unconvinced about the benefits oftechnology on instructional productivity are less likely to use technol- ogy in their practice (Kim et al. 2013)

**Resource availability**

Benefitting from the rich materials is one of the most positive experience for the student-teachers in using online learning

[MP3]

**User-Friendly**

**Productivity**

[MP4]

**Definition and Application of Learning Management System in Pre-Service Education**

The researchers have defined Learning Management System has

* In the past few decades, there has been an increasing amount of literature concerning the
* Experimental evidence has shown that digital
* previous literature identified several challenges of integrating

**Teachers’ Attitude/Perception**

Teachers' perceptions and approaches and, consequently, the learning contexts they provide, are known to influence students' perceptions. Successful integration of learning technologies leading to enhanced learning outcomes is unlikely unless teachers perceive and use technology as an integral part of a student centred/conceptual change teaching approach. Only through students perceiving learning technologies as part of a learning context which encourages independence in learning and deep learning approaches are enhanced learning outcomes likely. The research also considered the likely impact of teachers’ perceptions on students’ perceptions and, consequently, on the integration of learning technologies into classrooms (Integrating learning technology into classrooms: The importance of teachers’ perceptions// Chris Cope, Peter Ward)

Students' approaches to learning are related to their teachers' approaches to teaching (Trigwell, Prosser & Waterhouse, 1999).

**Learning Management System**

A number of studies have defined and explained the term LMS and differentiated it from similar concepts and terms.

**“**An LMS is the infrastructure that delivers and manages instructional content, identifies and assesses individual and organizational learning or training goals, tracks the progress towards meeting those goals, and collects and presents data for supervising the learning process of an organization as a whole” (Szabo, M., & Flesher, K. (2002). CMI theory and practice: Historical roots of learning management systems. Paper presented at the E-Learn 2002 World Conference on E-Learning in Corporate, Government, Healthcare, & Higher Education, Montreal, Canada).

“An LMS delivers content but also handles course registration and administration, skills gap analysis, tracking and reporting” (Gilhooly, 2001/ Gilhooly, K. (2001). Making e-learning effective. Computerworld, 35(29), 52-53)

“Learning management systems are considered to be course management platforms for instructors to design, develop, and prepare their classroom to deliver online education to their students” (Walker, 2006).

The implementation, effectiveness, and experience of using LMS have been extensively studied and reported in the literature.

A number of studies have evaluated the advantages and disadvantages of LMS. ( The Evaluation Of Learning Management Systems By Using Fuzzy Ahp, Fuzzy Topsis And An Integrated Method: A Case Study/ Yasemin ALTUN TURKER; //

**User experience and attitude perception of LMS**

The major stake holders of the LMS are teachers, students and educational administrators. Some of the studies investigated the experience of both teachers and students ( ) while others investigated either the students’ experience ( ) or teachers’ experience ( ).