A critical review on blended learning versus traditional lecture method

Muhammad Hafeez*, Allama Iqbal Open University, Islamabad, Pakistan.

Abstract

From the beginning of the 21st century, leaning strategies have been changed from traditional to information and communication technology-based. A critical review of published articles about blended and traditional leaning strategies has been conducted to highlight the importance and significance of both learning strategies. Thirty-six research articles published in various databases in various disciplines have been selected for review. The review of the literature showed that in most of the studies, the blended learning strategy proved to be a more effective learning strategy against the traditional lecture method. From 36 published articles reviewed, 25 studies showed statistically more significant value in the blended learning approach for academic achievement and critical and creative skills in various disciplines. On the basis of this study, it is strongly recommended that blended learning strategy must be applied to achieve high academic and professional results.

Keywords: Thinking skills, creative skills, leaning styles, strategies, planning.

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* ADDRESS FOR CORRESPONDENCE: **Muhammad Hafeez,** Shenzhen University, Islamabad, Pakistan.
E-mail address: mh9589041@gmail.com

1. Introduction

Learning is a key element of education and an important element for the development of a country (Hafeez et al., 2020). Learning and education are interchangeable fields. In the 20th century, it was necessary to be present physically for the teaching–leaning process (Ajmal, Hafeez & Saira, 2021), but in this modern era of the 21st century, the inventions of information technological tools have totally changed the teaching–learning process (Hafeez, 2021). The application of information technology in the learning process is called digital learning or e-learning (Arias, Gluskin, McClain, Peters & Scott, 2016).

The learning process depends on the learning strategy or method being used for learning. Various learning strategies have been stated in the literature (Kohli et al., 2019; Safari et al., 2020; Saira et al., 2021). In the present scenario, the learning method or strategy which is being discussed in the literature is the blended learning method or strategy (Hafeez, 2021; Yashwant et al., 2020). A lot of studies have been conducted to determine the significance of the blended learning method against the traditional lecture method (Holbrey, 2020; Hafeez et al., 2021).

The traditional lecture method is one of the oldest learning strategies. It is a useful and economic learning strategy for the transfer of essential information and concepts to a large group of learners. Although the traditional lecture method has a lot of advantages, evidence from various studies shows that this learning strategy is not very effective for the development of teaching–learning skills and critical thinking skills required for higher education, particularly in medical-related fields. This is the reason by which traditional lecture method is stated as a teacher-centred learning strategy where information is transferred by the instructor and is passively acknowledged by the learners (De Kok, Divaris & Samuelson, 2017).

Many scholars and researchers defined blended learning in different ways. Makhdoom, Khoshhal, Algaidi, Heissam and Zolaly (2013) determined that blended learning is a flexible learning technique in which face-to-face and online learning are combined by integration of technology in the learning process. Eryilmaz (2015) suggested that blended learning is a learning method in which face-to-face and technology-based learning are combined to increase the learning abilities of students and teachers. The classes may be conducted online in blended learning. Alzahrani (2017) defined blended learning as the capability of combining elements of classroom by providing sources for face-to-face and online learning. Albiladi and Alshareef (2019) stated that blended learning is an instructional strategy in which face-to-face and online learning are combined by reducing the classroom study hours. The main difference between blended and traditional learning strategies is shown in Table 1.

Table 1. Difference between traditional and blended learning

Features	Traditional learning	Blended learning
Location	Physical classes	At any place (flexible)
Learning approach	Face-to-face learning	Face-to-face learning and online
Time for learning	Time-specific (not flexible)	Not time-specific (flexible)
Technology application	No technology application	Necessary to use the technology

Some researchers (Hrastinski, 2019; Kazu & Demirkol, 2014) indicated that blended learning has positive effects on the learning process. By applying this method of leaning, the learners can not only learn more, but also the learner's participation and interaction with teachers increases. This strategy also gives enough time for students and teachers to clear their concepts. The difference between traditional and blended learning strategies is shown in Figures 1 and 2.
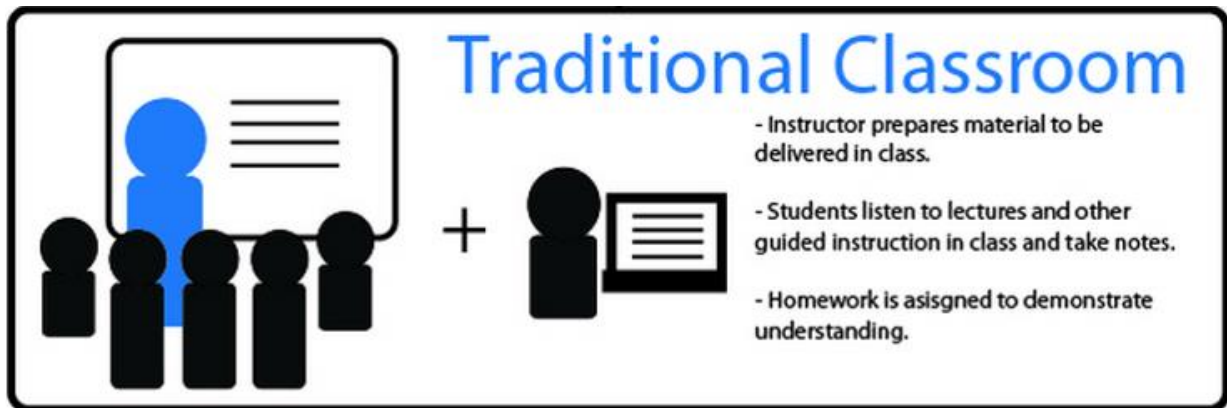
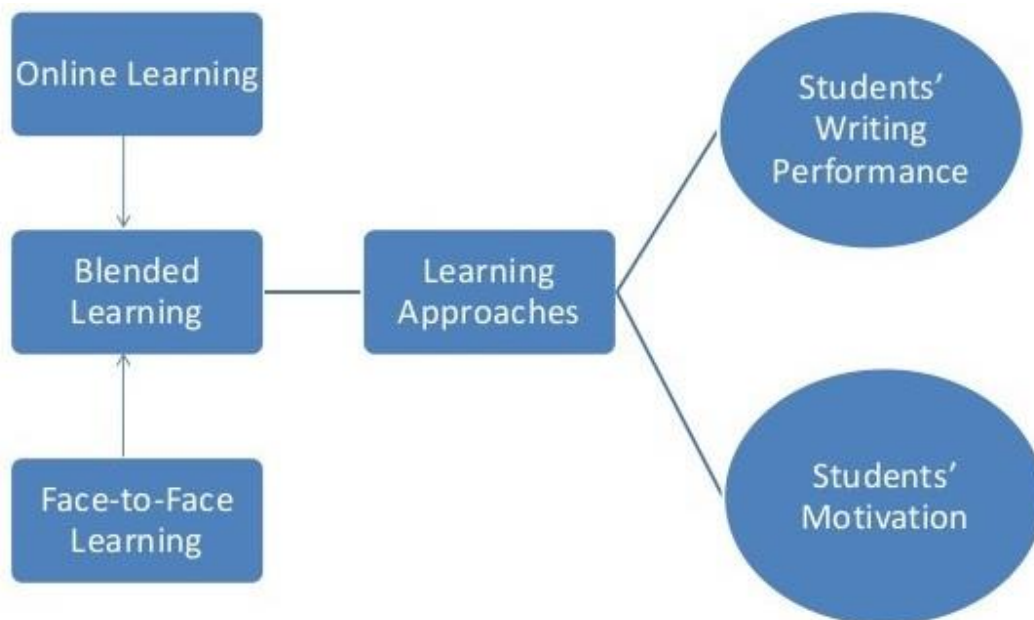**Figure 1. Pictorial concept of the traditional learning strategy**

Figure 2. Conceptual framework of the blended learning strategy

1.1. Purpose of the study

Although there is devastating support in studies for extensive acceptance of the blended learning process, scholars are still facing difficulties for determining the most proper way to apply blended learning in the educational systems (Hockly, 2018). The objectives of this study are to critically review the previous researches about blended and traditional learning in various disciplines, to highlight the challenges for implementation of blended learning and possible solutions for challenges in blended learning in various disciplines.

2. Review of the literature

2.1. Traditional lecture method

A lecture teaching method is stated as in which the instructor continuously speaks before a group of students on a particular subject or topic. The group size may vary from 20 to 1,000. The instructor is responsible for delivering whole of the content and subject matter. It is one of the oldest teaching

methods used in schools, colleges and universities in various disciplines. The lecture method of teaching is grounded on the transfer of information from the instructor to the learners in the presence of learners. The lecture method of teaching is also called traditional lecture or teaching method. Many instructors and researchers believe that traditional lecture method is not more successful in the cognitive development of learners as it is a passive method of learning. It does not involve the learners to contribute in the educational process. Usually, the instructor presents the whole lecture before the learners. The learners get the notes of the lecture and prepare them for the examination. The major reason for adopting the lecture method of teaching is its ability to handle a large number of learners at a time (Giorgdze & Dgebuadze, 2017). The important characteristics of lecture teaching method are highlighted and shown in Figure 3.
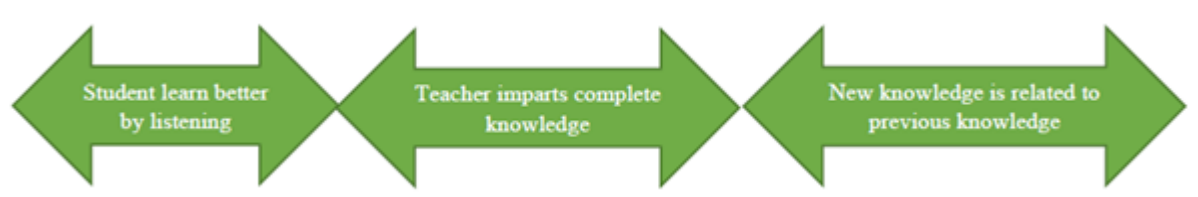

Figure 3. Characteristics of the lecture method of teaching

In the current age, the lecture teaching method is considered as a boring method because it does not allow the students to actively take part in the learning process. However, it can be made effective by blending the information technology tools (Fulford & Mahon, 2018). Gooblar (2019) argued that telling (the lecture method of teaching) is an excellent method for learners if is blended with information and technology tools as in the lecture method where the instructor delivers all the contents with details.

2.2. Blended learning method

2.2.1. Background and development of blended learning
Mazur and Hilborn (1997) conducted an experiment to integrate the information and communication technology in the learning process. They found that the use of information technology and digital media in the classroom improves learners' engagement, critical thinking skills and learning abilities.

Blended learning is a conceptual learning process that involves integration of information and communication technology into various instructional strategies in various disciplines (Owston, 2018). A lot of researchers have conducted researches to elaborate its effectiveness from grade one to higher education in various disciplines (Alseweed, 2013; Marchalot et al., 2018; Zhang & Zhu, 2020) and it proved to be one of the most dynamic learning methods in various disciplines. The important characteristics of blended learning are shown in Figure 4.
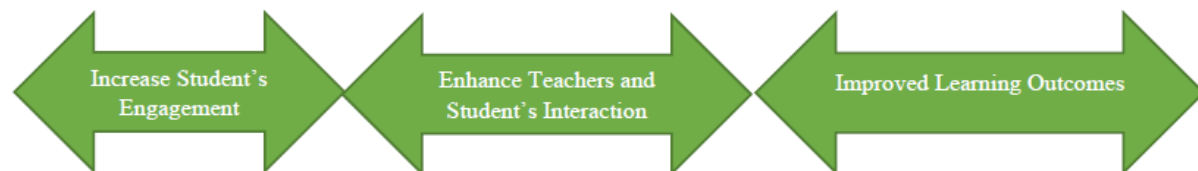
Figure 4. Characteristics of the blended learning method

Lu et al. (2018) suggested that blended learning is endorsed by various colleges and universities in various disciplines because of its positive results on students' academic achievement and critical thinking skills. Cuesta (2012) suggested that the key objective of blended learning is to offer a platform for the learners according to their skills, styles and needs. Erdem and Kibar (2014) conducted a research to know the opinion of learners about the implementation of blended learning. The

consequences of the research indicated that the learners have positive feedback about blended learning.

3. Databases for the selection of research publications for review

There were totally 36 research papers selected for review. Twelve research papers from the Elsevier database, seven research papers from the Springer data base, eight research papers from the Wiley Online Library database, five research papers from the Taylor and Francis database and four research papers from other databases were studied and selected for review. The selection process for review is shown in Figure 5.
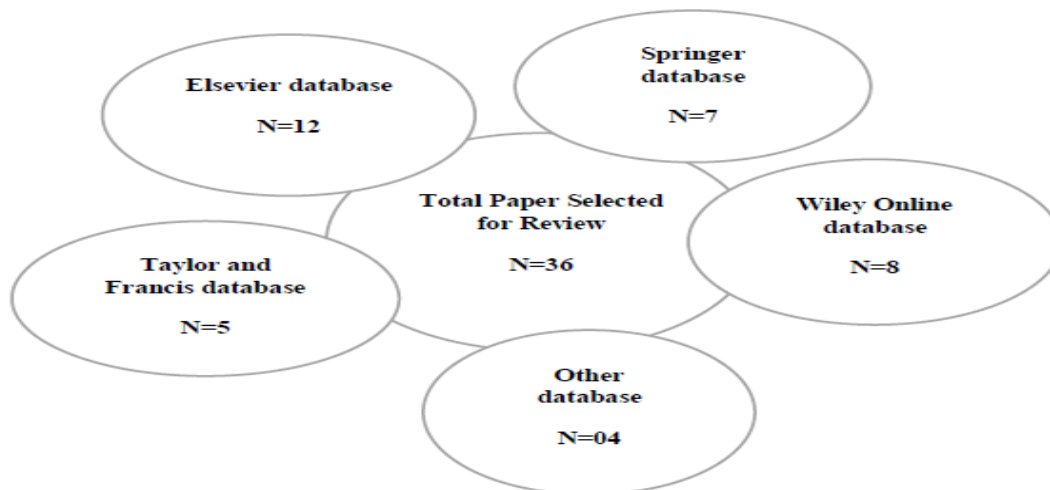

Figure 5. Review selection process

The learning outcomes of 36 published studies in various disciplines are illustrated in Table 2. Most of the studies showed that blended leaning has proved to be more effective and has created a conducible environment strategy in the classroom in various disciplines.

Table 2. Review results of the studies in various disciplines reviewed in this article

Reference	Class	Subject	Outcomes
Oderinu, Adegbulugbe, Orenuga and Butali (2020)	Undergraduate students	Dental course	The study concluded that blended learning increased the learning skills of students significantly.
Choi, Lindquist and Son (2014)	Undergraduate nursing students	Psychology	The blended learning process improved the learning outcomes when compared to the traditional learning approach, but no significant difference has been found.
Miller, McNear and Metz (2013)	Undergraduate students	Physiological course	The consequences of the study indicated that the learners performed 8.5% better by applying the blended learning approach. The learning method also increased the comprehension skills of the learners.
Delialioglu (2012)	First semester undergraduate students	Computer networks course	The blended learning strategy increased the student's engagement and critical thinking skills.

Khalid and Azeem (2012)	Secondary school students	Biology	The study indicated that blended learning significantly increases the students' academic achievement and problem-solving abilities.
Gholami et al. (2016)	Third-year nursing students	Critical care nursing	The results of research showed the significance of blended learning. The study also revealed that the modern learning approaches improve students' learning abilities and critical thinking skills.
Frame et al. (2015)	First-year pharmacy students	Different pharmacy courses	The students suggested that the blended learning approach is a problem-solving approach as it increased the students' problem-solving abilities. They preferred the blended learning approaches over traditional lecture method.
Hyun, Ediger and Lee (2017)	Undergraduate student	Education course	The students performed better in the blended learning method and called it as an active learning method. This method improved the students thinking, communication and engagement skills.
Jusoh et al. (2016)	Graduate students	Philosophy	The results of the study indicated that the students scored better grades in integrated computer learning over the traditional lecture method. The students reported that blended learning approaches improve the understanding level, communication skills, active learning in classroom, sharing of results among the students and opportunity to help the other classmates.
Meguid and Collins (2017)	Undergraduate students	Dental curriculum	The conclusion showed that the blended learning approach helped learners to be motivated and more attentive towards their learning.
Huggins and Stamatel (2015)	Undergraduate students	English communication course	No significant differences have been found by applying the blended learning and traditional lecture methods.
Blissitt (2016)	Undergraduate baccalaureate nursing programmes	Pathophysiology courses	The results of the study indicated that statistically no significance differences have been found between the two learning approaches.
Montassier et al. (2016)	Fifth-year medical students	Medical courses	The study concluded that both the leaning approaches have the same effects on the students' learning abilities, critical thinking skills and interaction skills.
Luna and Winters (2017)	First-year students	Physics	The blended learning approach improved the students' academic achievement. However, statistically no significant difference has been found between the blended and traditional learning approaches.
Shi, Peng, Zhang and Yang (2017)	Eighth-grade students	Mathematics	The results of the study indicated that integrated web-based learning approaches increased the students' higher order thinking skills and academic level of the learners. A large significant difference has been found between the integrated web-based learning approach and traditional lecture method.

Arias et al. (2016)	Undergraduate dental students	Dental courses	The students learnt more in the blended learning method and scored better academic results.
Adams, Randall and Traustadottir (2015)	Undergraduate students	Microbiology course	The students performed better in the traditional learning method. No statistical differences have been found between the blended and traditional learning approaches.
Khatiban, Falahan, Amini, Farahanchi and Soltanian (2019)	Nursing students	Patient care course	The results of the study concluded that blended learning approach increases the moral values in the learners. The blended learning method showed a statistically significance difference from the traditional learning method.
Wong and Ng (2016)	Electronics engineering	Fundamentals of operational amplifier.	It was concluded in a study that the blended learning approach significantly increases the academic achievement of the learners when compared to the traditional learning method.
Lochner, Wieser, Waldboth and Mischo-Kelling (2016)	Anatomy students	Anatomy courses	The research concluded that students appreciated the online learning. Their confidence and motivation also improved by online learning process. However, no significant difference has been found between the learning methods applied for learning process.
Daud, Chaudhry and Ali (2016)	Fourth year MBBS students	Community health and nutrition course	The results indicated that blended learning process increases the efficacy of learners in learning process. The learning method used in the study also increased the academic achievement of the learners. However, no significance differences have been found between blended and Traditional lecture strategies statistically.
Dehghanzadeh and Jafaraghaee (2018)	Second-year bachelor's nursing students	Musculoskeletal medical-surgical nursing course	After applying the blended learning approach, the grades of the learners improved and their critical thinking skills also improved. Statistically, large significant differences have been found between the blended and traditional learning approach.
Jong (2016)	10th grade	Stoichiometry course	It is concluded in this study that the application of modern learning approaches increases the learning abilities of the learners. The learning approaches used in the study show large significant differences.
Bazelais and Doleck (2018)	College students	College mechanics course	The results of the study concluded that the learners in the blended learning classroom performed better. The students developed their concepts in the blended learning. Large significant differences have been found between the blended learning and traditional learning approaches.
Farashahi and Tajeddin (2018)	Undergraduate students	Business education	The study concluded that the blended learning approach is the most active learning method. This method improves the critical thinking skills, communication skills and conceptual abilities. Statistically, large significant differences have favoured the blended learning approach.

Asarta and Schmidt (2017)	Eighth-grade students	Collegiate course	The results of the study indicated that statistically no significance differences have been found between the blended learning and traditional learning approaches. In both learning strategies, the students got the same academic grades.
Ilic, Nordin, Glasziou, Tilson and Villanueva (2015)	Medical students	Clinical training	The results of the study indicated that the blended learning approach has no effect on medical education. The traditional lecture method is better than the blended learning approach. No statistical significance has been found in this study.
Nalini, Deepak, Neelamma, Sahana and Jayashree. (2020)	Second-year MBBS students	Clinical course	The study concluded that the integration of blended leaning in education system significantly improved the learning process, students' critical and creative skills. The blended learning approach proved to be better when compared to the traditional leaning approach.
Baker (2018)	Undergraduate students	Education courses	The results of the study revealed that both learning approaches developed the same learning achievement. No statistically significant differences have been found between the blended learning and traditional learning approaches.
Guarascio, Nemecek and Zimmerman (2017)	Undergraduate	Clinical pharmacy	The results indicated that the blended learning approach and traditional learning approach has no statistical significance. Both methods are useful under various learning conditions and environments.
Wei, Shi, Yang and Liu (2017)	College students	English course	The study concluded that statistically a significant difference has been found between the blended learning and traditional learning approaches.
Abedi, Keshmirshekan and Namaziandost (2019)	Intermediate	English	The students who learnt by blended learning approach have better academic achievement. Statistically, large significance differences have been found between the blended and traditional learning approaches.
Sheikhaboumasoudi, Bagheri, Hosseini, Ashouri and Elahi. (2019)	Nursing student	Fundamentals of nursing course	The findings of the research indicated that the students achieved higher academic achievement in the blended learning approach.
Tseng and Walsh (2016)	Undergraduate	English literacy course	The blended learning approach significantly improved the learning abilities of the learners and proved to be best teaching and learning approach.
Furio, Juan, Segui and Vivo (2015)	Primary students	Computer studies	The consequences of the study indicated that blended learning improved the students' academic achievement significantly than the traditional lecture method.
Scott, Green and Etheridge (2016)	Undergraduate students	Calculus	The blended learning strategy proved to be a better strategy than the traditional lecture method. The study also concluded that the blended learning approach increases the self-efficacy of the learners.

The statistical results of studies of various disciplines reviewed are shown in Table 3. The results showed that in most of the studies, the blended learning strategy has more significant value than the traditional learning strategy.

Table 3. Statistical results of the studies in various disciplines reviewed in this article

References	Learning methods	Mean	SD	*p*	Remarks
Oderinu et al. (2020)	Blended	3.75	0.50	0.004	Significant
	Traditional	3.42	0.56		
Choi et al. (2014)	Blended	1.02	0.79	0.071	Significant
	Traditional	1.63	0.39		
Miller et al. (2013)	Blended	87.25	2.18	0.021	Significant
	Traditional	78.66	5.58		
Delialioglu (2012)	Blended	33.33	2.234	0.015	Significant
	Traditional	26.07	1.948		
Khalid and Azeem (2012)	Blended	80.50	7.26	0.01	Significant
	Traditional	74.11	7.09		
Gholami et al. (2016)	Blended	2.76	0.67	0.003	Significant
	Traditional	2.31	0.92		
Frame et al. (2015)	Blended	5.42	1.72	0.041	Significant
	Traditional	4.78	2.05		
Hyun et al. (2017)	Blended	1.25	0.23	0.021	Significant
	Traditional	1.02	0.52		
Jusoh et al. (2016)	Blended	3.45	0.45	0.011	Significant
	Traditional	3.15	0.67		
Meguid and Collins (2017)	Blended	7.98	0.91	0.023	Significant
	Traditional	6.75	1.21		
Huggins and Stamatel (2015)	Blended	1.89	0.76	0.071	Non-significant
	Traditional	2.12	0.61		
Blissitt (2016)	Blended	45.4	3.54	0.089	Non-significant
	Traditional	56.7	3.23		
Montassier et al. (2016)	Blended	36.34	5.79	0.081	Non-significant
	Traditional	36.21	5.82		
Luna and Winters (2017)	Blended	6.23	2.13	0.097	Non-significant
	Traditional	6.12	2.01		
Shi et al. (2017)	Blended	4.47	1.02	0.026	Significant
	Traditional	3.67	1.23		
Arias et al. (2016)	Blended	34.76	2.36	0.005	Significant
	Traditional	30.21	3.10		
Adams et al. (2015)	Blended	10.79	2.10	0.085	Non-significant
	Traditional	11.23	1.87		
Khatiban et al. (2019)	Blended	17.56	1.09	0.012	Significant
	Traditional	16.45	1.21		
Wong and Ng (2016)	Blended	21.23	4.78	0.002	Significant
	Traditional	20.19	4.89		
Lochner et al. (2016)	Blended	41.21	2.78	0.067	Non-significant
	Traditional	42.11	2.74		
Daud et al. (2016)	Blended	15.34	1.75	0.094	Non-significant
	Traditional	15.20	1.69		
Dehghanzadeh, and Jafaraghaee (2018)	Blended	33.32	2.34	0.0001	Significant
	Traditional	25.62	3.35		

Jong (2016)	Blended	1.21	0.37	0.039	Significant
	Traditional	1.09	0.41		
Bazelais and Doleck (2018)	Blended	1.67	0.39	0.020	Significant
	Traditional	1.12	0.65		
Farashahi and Tajeddin (2018)	Blended	19.25	3.25	0.048	Significant
	Traditional	17.32	4.12		
Asarta and Schmidt (2017)	Blended	1.29	0.32	0.071	Non-significant
	Traditional	2.11	0.21		
Ilic et al. (2015)	Blended	15.16	0.99	0.069	Non-significant
	Traditional	14.99	0.79		
Nalini et al. (2020)	Blended	1.23	0.37	0.001	Significant
	Traditional	1.02	0.42		
Baker (2018)	Blended	3.37	0.98	0.0087	Non-significant
	Traditional	3.29	0.91		
Guarascio et al. (2017)	Blended	45.34	5.43	0.098	Non-Significant
	Traditional	44.23	5.12		
Wei et al. (2017)	Blended	78.91	7.89	0.002	Significant
	Traditional	72.87	8.91		
Abedi et al. (2019)	Blended	9.21	1.34	0.0032	Significant
	Traditional	8.92	1.57		
Sheikhaboumasoudi et al. (2019)	Blended	2.34	0.24	0.011	Significant
	Traditional	1.98	0.62		
Tseng and Walsh (2016)	Blended	3.81	0.61	0.045	Significant
	Traditional	3.51	0.43		
Furio et al. (2015)	Blended	1.29	0.23	0.023	Significant
	Traditional	1.10	0.31		
Scott et al. (2016)	Blended	2.31	0.87	0.032	Significant
	Traditional	2.02	0.99		

4. Discussion

Hattie (2018) pointed out that the single most important factor that effects learners learning is the method and quality of teaching the learners receive. Information and communication developments have also changed the way of teaching–learning systems. Blended classroom learning has become an effective learning approach in the current educational system. The importance of blended learning has been proved by many researchers (Gladkova, Kutepov, Ilyashenko, Smirnova & Vaganova, 2019; Inayati, Setiawan, Suryanti & Wicaksono, 2020).

Aristovnik, Tomazevic, Kerzic and Umek (2017) stated that blended learning is an effective way of learning as it eliminates distance. This is also computer-based or mobile-based learning. Blended learning uses multiple forms of information and communication technology. Harandi (2015) pointed out that the blended learning approach is an integrated form of traditional learning. It is established to educate learners at every stage of learning.

A review study has been conducted to highlight the importance of blended versus traditional lecture learning. Most of the studies reviewed in this article showed that blended learning proved to be one of the most effective and dynamic learning strategies in the educational system. Most of the studies reviewed have significant effects on the academic achievement, critical thinking skills and creative skills more than that of the traditional learning method.

4.1. Challenges in implementing the blended learning strategy

The review of the literature conducted in this article for the implementation of blended learning has brought about four types of challenges before the researchers, namely (i) issues related to the instructors, (ii) issues related to the students, (iii) technological issues and (iv) university or institutional issues. The traditional culture of institutions is the most important issue for the implementation of the blended learning strategy.

The teachers have also some issues related to blended learning like lack of skills to integrate blended learning, increased workload and finding the right blending strategy for different curriculum (Hussain, Shahzad & Ali, 2019). On the basis of previous published literature, it has been observed that teachers' workload is the most crucial challenge for the instructors. In the blended learning strategy, sometimes instructors require more time to upload the learning materials and evaluate learners' work online (Banyen, Viriyavejakul & Ratanaolarn, 2016). The lack of technological and pedagogical skills of the instructors is also a great challenge for the implementation of the blended learning strategy (Charbonneau-Gowdy, 2018). The students' issues related to blended learning are participation in the blended learning process, Internet issues and login issues (Surjono et al. 2017).

4.2. Solutions or recommendations to solve the challenges in blended learning

Several solutions have been proposed in the literature for the implementation of blended learning. Proper planning is required to implement the blended learning strategy at the institution level (Masood & Yousuf, 2018). The teachers and students must have enough training to implement blended learning in the classroom. The teachers and students must provide high-speed Internet facilities to implement the blended learning strategy. The institutions must change their culture of the traditional learning strategy.

5. Conclusion

A critical review study has been conducted on blended and traditional learning approaches. Thirty-six articles published from 2012 to 2020 in various databases have been selected for the critical review of previous literature. Their statistical results are also highlighted to check the significance of studies. The review showed that in most of the studies, there were significant differences of academic achievements among the learners who learned by traditional and blended learning approaches. The blended learning approach proved to be a more effective strategy in the literature review. So, on the basis of previous literature, it can be concluded that the blended learning strategy is a more effective learning strategy when compared to the traditional learning strategy.

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