Effects Of Blended Learning In Comparison Of Traditional Learning To Provide Safer Learning Environment- A Comparative Review

Muhammad Hafeez[1*], Yasmeen Akhter[2]

[1,2] Institute of Southern Punjab, Multan, Pakistan.
[*] Corresponding author:
Email: mh9589041@gmail.com

Abstract.
Learning strategies have shifted from conventional information to communication technology-based learning since the beginning of the twenty-first century. A study of published articles on blended and traditional learning strategies was done to emphasise the value and significance of both learning strategies and to investigate their efficacy in promoting a safer learning environment in different educational levels. Thirty-six (36) research articles from various disciplines published in Web of Science and Scopus databases were chosen for review. According to the review of researches, blended learning demonstrated to be a more successful learning approach than traditional learning strategy in the majority of studies. Twenty-five (25) studies found a statistically more significant benefit in blended learning strategy for academic success, critical and creative abilities, and a safer learning environment in diverse disciplines, out of 36 published articles evaluated. Based on the findings of this study, it is strongly suggested that blended learning strategies be used to attain high academic and professional goals while also providing a safer learning environment in educational institutions and society.

Keywords: *Critical Thinking Skills, Creative Skills, Leaning Styles, Strategies, Planning*

I. INTRODUCTION

Learning is a key element of education and an important factor for the progress of a state. Learning and education are interchangeable fields. In the 20th century, it was necessary to present physically for the teaching-leaning process, but in this modern era of 21st century, the inventions of information technological tools have totally changed the teaching learning process. The application of information technology in the learning process is called digital learning or e-learning (Arias et al., 2016). The learning process depends on the learning strategy or method being used for learning. Various learning strategies have been stated in researches (Safari et al., 2020). In the present scenario, the learning strategies that are being discussed in the current review literature are blended and traditional learning strategies (Yashwant et al., 2020). Traditional learning strategy is one of the oldest learning strategies. It is a useful and economic learning strategy for transfer essential information and concepts before a large group of learners.

Although traditional learning strategy has a lot of advantages but, evidences from various previous studies have shown that this learning strategy is not very effective for development of teaching-learning skills and critical thinking skills require for higher education particularly in medical related fields. This is the reason by which traditional learning strategy is stated as teacher-centred learning strategy where information is transferred by the instructor and passively acknowledged by the learners (Samuelson et al., 2017). Many scholars and researchers defined the blended learning strategy in different ways. According to Makhdoom et al., (2013), blended learning strategy is a flexible learning approach in which face-to-face and online learning are integrated through the incorporation of technology in the learning process. Blended learning strategy is a learning approach in which face-to-face and technology-based learning are integrated to improve students' and instructors' learning skills. The classes may be conducted online in blended learning (Eryilmaz, 2015). Alzahrani, (2017) defined blended learning strategy as the capability of combined elements of classroom by providing the sources for online and face to face learning . Blended learning strategy is an educational learning approach in which face-to-face and online learning are integrated by minimising classroom study hours (Albiladi & Alshareef, 2019). The difference between traditional and blended learning strategies is shown in table 1.

Table 1. Difference between Traditional and Blended Learning Strategies

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 specific time (flexible)
Technology Application	No Technology application	Necessary to use the technology

The researchers including (Hrastinski, 2019) showed that blended learning strategy has positive effects on learning process. By applying this strategy of leaning the learners cannot only have learned more but, the learner's participation and interaction with teachers also increased. This strategy also provides enough time for students and teachers to clear their concepts. The difference between traditional and blended learning strategies are revealed in figures 1 and 2.

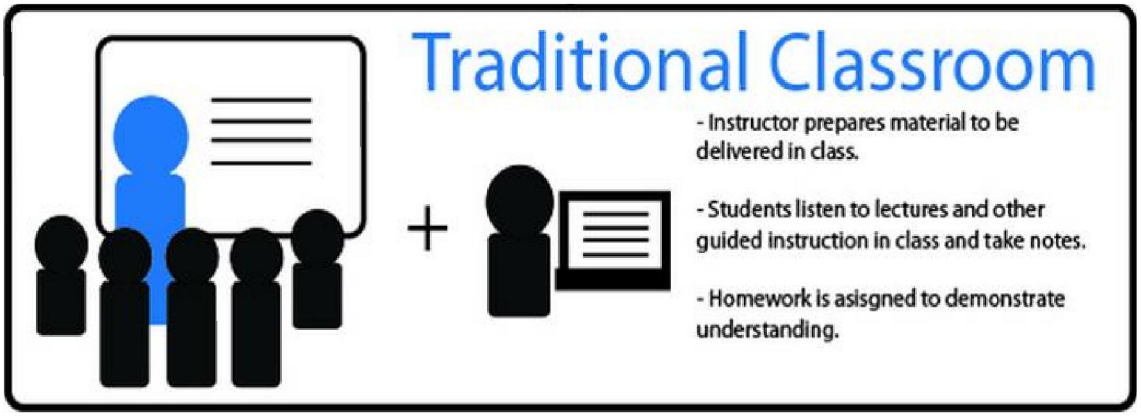

Fig 1. Basic Concept of Traditional Learning Strategy

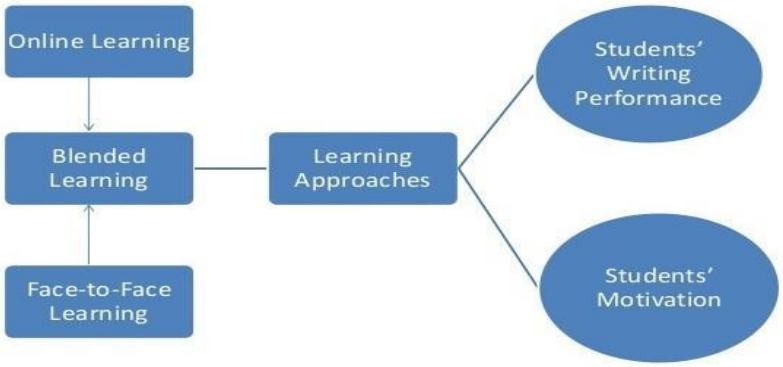

Fig 2. Conceptual Framework of Blended Learning Strategy

1.1 Purpose of the Study

Although devastating support in studies for extensive acceptance for blended learning strategy, scholars are still facing difficulties for determining the most proper way to imply the blended learning strategy in the educational systems (Hockly, 2018). The purposes of current review study were (i) to critically review the previous researches about blended and traditional learning strategies in various disciplines in different educational levels (ii) to highlight the challenges for implementation of blended learning strategy and possible solutions for challenges in blended learning strategy.

II. MATERIALS AND METHODS

2.1 Article Selection Process

The key objective of current review research was to compare the significance of blended and traditional learning strategies. For this purpose, Web of Science and Scopus databases were selected to collect the review of related articles. In Web of Science and Scopus interface, blended versus traditional learning strategies were added terms were entered as the main contents of the search. The custom year range from 2012 to June 2020" was determined as the time limit for current study. The advanced search was done from 10th to 15th September, 2021. Based on the initial results, 172 papers were discovered. The specific

inclusion criteria were applied to limit articles for state-of-the-art review on the blended versus traditional learning strategies. The first criterion was to use "Educational research" as a web of science and Scopus category. "Only items" as documents and Pdf types were the other inclusion criterion. After applying the inclusion criteria, 84 articles have been found. In order to conclude the research and review articles to be reviewed, specific exclusion criteria were then implemented. The first criterion of exclusion was to exclude more than once the same articles. Secondly, articles not available in full text were to be excluded. The final criterion for exclusion included the removal of articles that had no direct connection with the comparison of blended and traditional learning strategies. Finally, the main sample of this systemic review study was determined by a total of 36 articles. The main selection process is summarized in Figure 3.

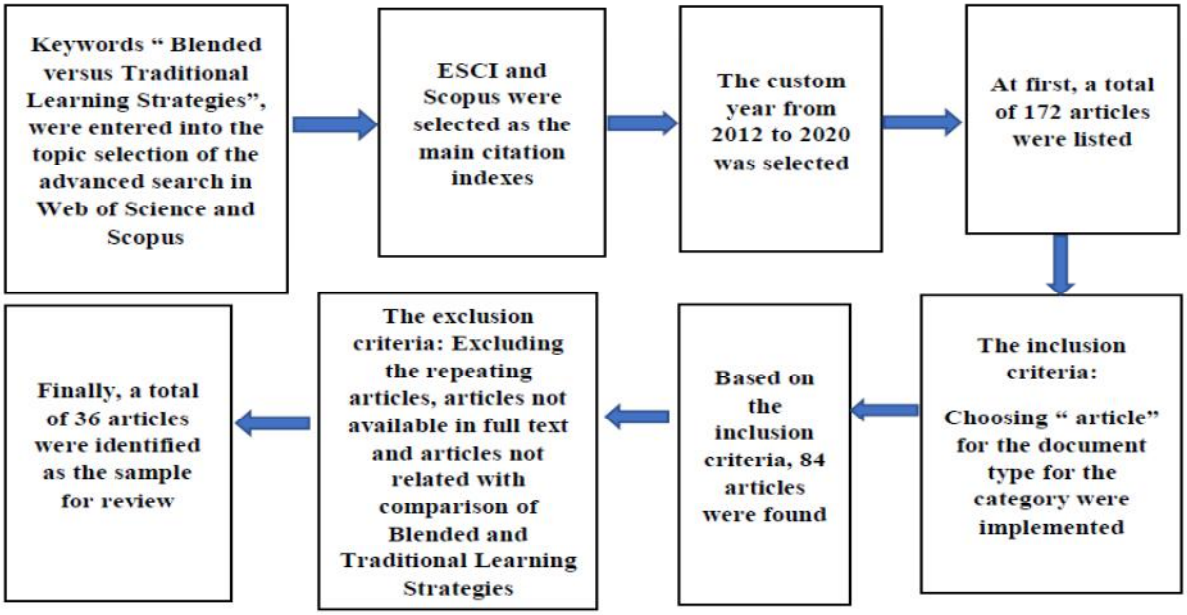

Fig 3. Article Selection Process

III. REVIEW OF LITERATURE

3.1 Traditional Learning Strategy

Traditional learning strategy is defined as one in which the teacher constantly speaks in front of a group of pupils about a certain subject or topic. The group size might range from 20 to 1000 people. The teacher is responsible for providing the whole subject matter information. It is one of the oldest learning strategies applied in schools, colleges, and universities in a variety of fields. The lecture style of instruction is based on the flow of knowledge from the teacher to the students before the students. The lecture style of instruction is also known as the conventional lecture or teaching method. Many instructors and academics feel that this technique is not more effective in cognitive growth of learners since it is a passive mode of learning. It does not allow students to participate in the educational learning process. Typically, the lecturer delivers the entire lecture in front of the students. The students receive the lecture notes and prepare for the assessment. The capacity to accommodate a large number of learners at one time is the primary justification for using the traditional learning strategy (Giorgdze & Dgebuadze, 2017). The significant characteristics of traditional learning strategy are shown in figure 3.

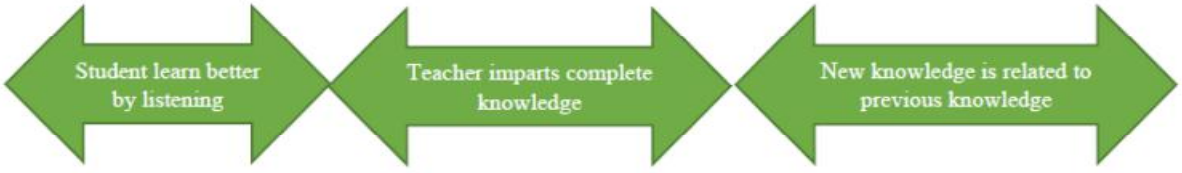

Fig 3. Characteristics of Traditional Learning Strategy

In today's world, the traditional learning strategy is seen as a boring method since it does not engage students in the learning process. It may, however, be made more effective by combining information technology

technologies (Fulford & Mahon, 2018). According to Gooblar, (2019) this style of teaching is a good technique for learners when combined with information technology tools, since in this learning strategy, the teacher presents all of the knowledge in great detail.

3.2 Blended Learning Strategy

A lot of researchers have done researches to elaborate its effectiveness from grade one to higher education in various disciplines (Marchalot et al., 2018; Zhang & Zhu, 2020) and proved to be one of the most dynamic learning strategies in various disciplines. Lu et al., (2018) suggested that blended learning strategy is endorsed by various colleges and universities in various disciplines because of its positive results on students' academic achievements and critical thinking skills. Cuesta, (2010) suggested that the key objective of blended learning strategy is to offer a platform for the learners according to their skills, styles and needs. The main characteristics of blended learning strategy is shown in figure 4.

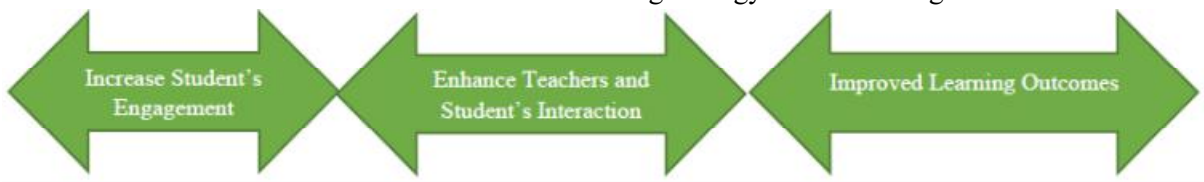

Fig 4. haracteristics of blended Learning Strategy

Mukaddes Erdem et al., (2014) conducted research to know the opinion of learners about the implementation of blended learning strategy. The consequences of the research indicated that the learners have positive feedback about blended learning strategy. The learning outcomes of thirty-six published studies in various disciplines are illustrated in table 2. The most of the studies showed that the blended leaning has proved to be more effective and conducible environment created strategy in the classroom in various disciplines.

Table 2. Review Results of the Studied in Various Disciplines Reviewed in this Article

References	Class	Subject	Outcomes
Oderinu et al., (2020)	Undergraduate students	Dental Course	The study concluded that blended learning strategy increased the learning skills of students significantly.
Choi et al., (2014)	Undergraduate Nursing students	Psychology	The Blended learning strategy improved the learning outcomes as compared to the traditional learning strategy but no significant difference has been found.
Miller et al., (2013)	Undergraduate students	Physiological course	The consequences of the study indicated that the learners performed 8.5% better by applying blended learning approach. The learning method also increased the comprehension skills of the learners.
Delialioğlu, (2012)	Undergraduate students	Computer networks course	The blended learning strategy increased the student's engagement and critical thinking skills.
Khalid & Azeem, (2012)	Secondary School students	Biology	The study indicated that blended learning strategy significantly increases the students' academic achievement and problem-solving abilities.
Gholami et al., (2016)	Nursing Students	Critical Care Nursing	The results of the study revealed that the modern learning approaches like blended learning strategy improves the students' learning abilities and critical thinking skills.
Frame et al., (2015)	Pharmacy Students	Different pharmacy courses	Students suggested that the blended learning strategy is a problem-solving strategy as it increased the student's problem-solving abilities.
Hyun et al., (2017)	Undergraduate student	Education course	The students performed better in blended learning strategy and called it as an active learning approach. This method improved the students thinking, communication and engagement skills.
			The students reported that blended learning strategy improved the understanding level, communication

Jusoh et al., (2016)	Graduate Students	Philosophy	skills, active learning in classroom, sharing of results among the students and opportunity to help the others classmates.
Meguid & Collins, (2017)	Undergraduate Students	Dental Curriculum	The conclusion showed that the blended learning strategy helped the learners to be motivated and more attentive towards their learning.
Huggins & Stamatel, (2015)	Undergraduate students	English Communication	No significant differences have been found by applying the blended and traditional learning strategies.
Blissitt, (2016)	Undergraduate Nursing Students	Pathophysiology Courses	Statistically no significance difference has been found between the blended and traditional learning strategies.
Montassier et al., (2016)	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 & Winters, (2017)	Higher Secondary Students	Physics	The blended learning strategy improved the students' academic achievement. However, statistically no significant difference has been found between the blended and traditional learning approaches.
Shi et al., (2017)	8th grade Students	Mathematics	A large significant difference has been found between the integrated web-based learning approach and traditional learning strategy.
Arias et al., (2016)	Undergraduate Dental Students	Dental courses	The students learnt more in blended learning strategy and scored better academic results.
Adams et al., (2015)	Undergraduate Students	Microbiology Course	The students performed better in traditional learning strategy. No statistical difference has been found between the blended and traditional learning approaches.
Khatiban et al., (2019)	Nursing Students	Patient Care Course	The blended learning strategy showed a statistically significance difference from the traditional learning strategy.
Wong & Ng, (2016)	Electronics Engineering	Fundamentals of Operational Amplifier	It was concluded that the blended learning approach significantly increases the academic achievement of the learners as compared to the traditional learning strategy.
Lochner et al., (2016)	Anatomy Students	Anatomy Courses	The confidence level and motivation improved by online learning process. However, no significant difference has been found between blended and traditional learning strategies.
Daud et al., (2016)	MBBS Students	Community Health & Nutrition course	The results indicated that blended learning increases the efficacy of learners in learning process. However, no significance differences have been found between blended and Traditional learning stratigies statistically.
Dehghanzadeh & Jafaraghaee, (2018)	Bachelor's Nursing Students	Musculoskeletal Medical-Surgical Course	Grades of the learners improved and their critical thinking skills also improved by blended learning strategy.
Jong, (2016)	10th grade	Stoichiometry Course	Application of modern learning approaches like blended learning increases the learning abilities of the learners.
Bazelais & Doleck, (2018)	College Students	Mechanics Course	Learners in blended learning strategy performed better than traditional learning strategy.
Farashahi & Tajeddin, (2018)	Undergraduate Students	Business Education	The blended learning strategy improved the critical thinking skills, communication skills and conceptual abilities of learners.
Asarta & Schmidt, (2017)	8th Grade Students	Collegiate Course	Statistically, no significance difference has been found between the blended and traditional learning approaches.
			The blended learning approach has no effect in

Ilic et al., (2015)	Medical Students	Clinical Training	medical education. The traditional learning strategy is better than blended learning strategy.
Nalini et al., (2020)	MBBS Students	Clinical Course	Integration of blended leaning strategy in education system significantly improved the learning process, students critical and creative skills.
Baker, (2018)	Undergraduate Students	Education Courses	Both learning approaches developed the same learning achievement. No statistically significant difference has been found between the blended and traditional learning strategies.
Guarascio et al., (2017)	Undergraduate Students	Clinical Pharmacy	Blended and traditional learning strategies have no statistical significance. Both strategies are useful under various learning environments.
Wei et al., (2017)	College students	English Course	The study concluded that statistically a significant difference has been found between the blended and traditional learning strategies.
Abedi et al., (2019)	Intermediate	English	The students learnt by blended learning strategy has better academic achievement.
Sheikhaboumasoudi et al., (2019)	Nursing Students	Fundamentals of Nursing Course	The findings of the research indicated that the students achieved higher academic achievement in blended learning strategy.
Tseng & Walsh, (2016)	Undergraduate Students	English Literacy Course	Blended learning approach significantly improved the learning abilities of the learners and proved to be best teaching and learning approach.
Furió et al., (2015)	Primary Students	Computer Studies	The blended learning strategy improved the students' academic achievement significantly than the traditional learning strategy.
Scott et al., (2016)	Undergraduate Students	Calculus	The blended learning strategy proved to be better strategy than traditional learning. The study also concluded that 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 form the traditional learning strategy.

Table 3. Statistical Results of the studied in Various Disciplines reviewed in this article

References	Learning Method	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		
Delialioğlu, (2012)	Blended	33.33	2.234	0.015	Significant
	Traditional	26.07	1.948		
Khalid & 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 & Collins, (2017)	Blended	7.98	0.91		

	Traditional	6.75	1.21	0.023	Significant
Huggins & 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 & 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 & 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, & 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 & Doleck, (2018)	Blended	1.67	0.39	0.020	Significant
	Traditional	1.12	0.65		
Farashahi & Tajeddin, (2018)	Blended	19.25	3.25	0.048	Significant
	Traditional	17.32	4.12		
Asarta & 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 & Walsh, (2016)	Blended	3.81	0.61	0.045	Significant
	Traditional	3.51	0.43		
Furió 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		

IV. DISCUSSION

Hattie, (2018) pointed that the single most important factors that effects the learners learning is the strategy and quality of teaching the learners receive. Information and communication developments have also changed the way of teaching-learning systems. The blended classroom learning has become an effective learning strategy in the current educational systems. The effectiveness of blended learning strategy has been proved by many researchers including (Suryanti et al., 2020). Aristovnik et al., (2017) stated that blended learning strategy is effective way of learning as it eliminates distance. This is also computer based or mobile based learning. The blended learning strategy use multiple forms of information and communication technology. Harandi, (2015) pointed that blended learning strategy approach is an integrated form of traditional learning. It is established to educate the learners at every stage of learning. A review study was conducted to evaluate the effectiveness of blended versus traditional learning strategies. A total of 36 published articles between 2012 to 2020 were selected by inclusion and exclusion criteria. The most of the studies reviewed in this article showed that blended learning strategy 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 traditional learning strategy.

4.1 Challenges in Implementing Blended Learning Strategy

The current review of literature done in this article for the evaluation of blended learning has brought four types of challenges before the researchers namely (i) Issues related to the instructors (ii) Issues related to the students (iii) Technological issues (iv) University or institutional issues. The traditional culture of the institutions is the most important issues for the implementation of blended learning strategy. The teachers have also some issues related to blended learning like lack of skills to integrate blended learning, increased workload and determining the accurate blending strategy for the different curriculum. On the basis of previous published literature, it has been observed that teacher's workload is the most crucial challenge for the instructors. In blended learning strategy, sometimes the instructors require more time to upload the learning materials and evaluating the learners work online (Banyen et al., 2016). The lack of technological and pedagogical skills in the instructors is also a great challenge for the implementation of the blended learning strategy. The student's issues related to blended learning are participation in the blended learning process, internet issues and login issues.

4.2 Solutions or Recommendations to Solve the Challenges in Blended Learning

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

V. CONCLUSION

A critical review study has been conducted on blended and traditional learning approaches. Thirty-six (36) articles published from 2012-2020 in various database 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 was a significance differences of academic achievements among the learners learnt by traditional and blended learning approaches. The blended learning approaches proved to be

more effective strategy in the literature review. So, on the basis of previous literature, it is concluded that blended learning strategy is more operative learning strategy as compared to the traditional learning strategy.

VI. RECOMMENDATIONS

The following recommendations were suggested on the basis of literature review:

i. The blended learning strategy must be applied to create and attractive and dynamic learning environment.

ii. The curriculum should be design according to the modern learning strategies like blended learning strategy.

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