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NEW OPPORTUNITIES IN CLASSROOM TRANSACTIONS: USING BLENDED LEARNING IN PEDAGOGY OF SOCIAL SCIENCES

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Abstract: The technical know-how and application of pedagogical strategies blending technology and teaching together, significant during the present century, demand the implementation of a Blended Learning approach in pre-service teacher education programmes. The success of the teacher education programme depends on the training provided to the student teachers according to the changing demands of the learners. It is quite accepted that there is a need for tapping the wide applicability of online learning combined with face-to-face instruction. The study aimed to investigate the effects of blended learning on pre-service teachers' achievement in Social Science. A quasi-experimental pre-test and post-test design was used to test the hypotheses. The participants of the study were 42 preservice teachers, divided into two groups: an experimental group (n=21) and a control group (n=21). An intervention programme using the blended learning teaching strategy was developed for the experimental group. To ensure the effectiveness of the blended learning strategy, the KEMP model of instructional design, validated by many researchers was chosen. The control group was taught using the traditional method and home assignment. An academic achievement test with four components of Bloom's taxonomy (knowledge, understanding, application and evaluation). SPSS was used to analyse the data and run a Paired **t-test**. The findings revealed statistically significant differences between the experimental and the control groups, in favour of the experimental group, hence confirming that blended learning is an effective innovative teaching strategy for B.Ed. classroom transactions. The study recommends the use of blended learning in higher education institutions.

Keywords: blended learning, pre-service teachers, academic performance, social science

Introduction

Even though blended learning has become a buzzword in the majority of educational settings, there is still quite a bit of ambiguity about what is meant by the term. Blended learning is the combination of instruction from two historically separate models of teaching and learning; traditional face-to-face learning systems and distributed learning systems. (Graham, 2006). In Blended Learning Programme the teacher integrates different teaching activities namely small group discussion, interaction, brainstorming methods and debate with new emerging social networks.

Blended learning is a pedagogical strategy that skilfully integrates online learning techniques such as online delivery of materials through web pages, discussion boards and email and Face-to-Face instruction. According to R. Jayanthi (2019), Blended learning is an approach to education that combines online educational materials and opportunities for interaction online with traditional place-based classroom methods. (R. Jayanthi,2019). It is an approach that is not just limited to be applied in a school environment but can be successfully used in professional development and teacher training.

Creating innovative learning environments has helped to ensure that learning and teaching can be carried out in accordance with defined goals. One of the emerging learning environments that have shown to be welcomed by students is blended learning (Lim & Morris, 2009).

In this context, many studies and research have been conducted so far, to find out the best of blended learning approaches.

Significance of the study

This study aims to ascertain the use of Blended learning intervention in the pedagogy of Social Science and also whether it brings improvement in academic performance of the teacher trainees. The present study ascertains whether the designed Blended Learning intervention based on the Flex model is successful, so that similar individualized intervention using Blended Learning can be developed.The significance of the present study is to provide a blended learning model for teacher training courses by taking an on-ground course and blending it with online learning environment to enhance the quality of the teaching experiences of pre-service teachers. Through this study the student teacher will learn Blended learning, so that they can use it in their classroom.

Objectives of the study

- To design a blended learning intervention integrating the flex model, technology, constructive approaches and inquiry-based learning to teach a topic in the Pedagogy of Social Sciences.
- To identify suitable technology and pedagogical practices based on constructive approach and inquiry-based learning for teaching of social science based on Blended Learning.
- To evaluate the effect of the Blended Learning approach on student teachers' academic performance.
- To ascertain the role of blended learning intervention in teacher education.

Hypotheses of the study

- H1: There is a significant difference in the Pre-test and the post- test scores of academic performance of students of the control group.
- H1: There is a significant difference in the academic performance of students of the experimental group before and after the intervention program.
- H1: There is a significant difference in the Pre-test and the post- test scores with regard to the knowledge level of students of the control group.
- H1: There is a significant difference with regard to the knowledge level of students of the experimental group before and after the intervention program.
- H1: There is a significant difference in the Pre-test and the post- test scores with regard to the understanding level of students of the control group.
- H1: There is a significant difference with regard to the understanding level of students of the experimental group before and after the intervention program
- H1: There is a significant difference in the Pre-test and the post- test scores with regard to the application level of students of the control group.
- H1: There is a significant difference with regard to the application level of students of the experimental group before and after the intervention program
- H1: There is a significant difference in the Pre-test and the post- test scores with regard to the evaluation skill of students of the control group.
- H1: There is a significant difference with regard to the evaluation skill of students of the experimental group before and after the intervention program

Variables

The **Independent Variable** of this study is Blended Learning Intervention

The **Dependent variable** is academic performance of Student Teacher in the Social Science Methodology.

Sample and Sampling Technique

Purposive sampling technique was used to select the sample. The present study primarily includes 42 final year student teachers of B.Ed., St. Ann's College of Education, Secunderabad.

Research Design

The present study followed a quasi-experimental design with control and experimental group. Based on the research objective, the participants were assigned to two groups, the experimental group and the control group. A pre- test was conducted for both the groups which was followed by the intervention programme for the experimental group The Experimental group was taught using Blended learning intervention, while the control

group was taught the same topic through conventional method. The intervention programme lasted for eight days. A post test was conducted for both the groups after the intervention programme.

Tools

The achievement test was constructed by the investigator covering the concept to be taught during the intervention. Due weightage was given to various levels of cognitive domain of learning like knowledge, understanding, application and evaluation. The investigator had constructed 22 test items for the duration of 45 minutes which included multiple choice questions and short answer questions.

The following tools were designed for this study:

1. **Assessment: Pre-test & Post-test:** to assess the existing level of knowledge on the selected topic in Social Science Pedagogy.
2. **Instructional Design:**

- Traditional for Control Group inclusive of teaching-learning material.
- Instructional Design based on Kemp Model used for Experimental Group:

3. **Blended Learning Intervention which included:**

- Flex Model
- ICT
- Activities and assignments based on a constructive approach

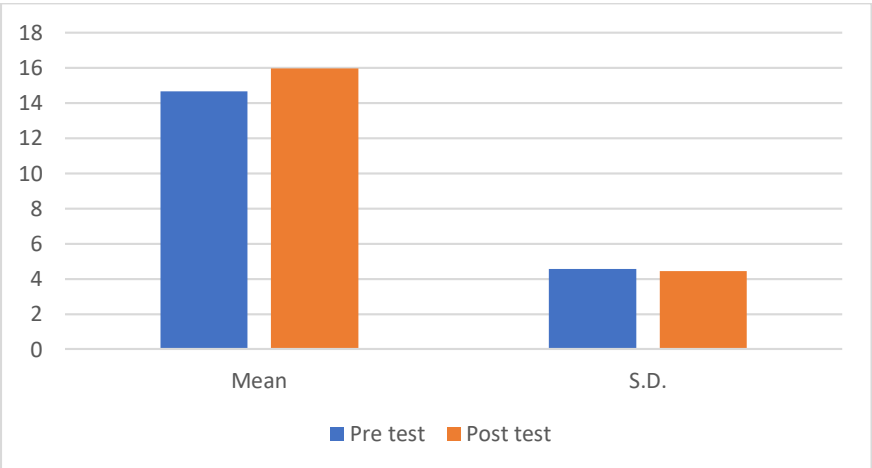
Analysis of the Data

Hypothesis 1: There is a significant difference in the Pre-test and the post- test scores of academic performance of students of the control group.

Table.1 showing differences in mean, standard deviation and *t*-value in the Pre-test and the post- test scores of academic performance of students of the control group

Description	N	Control Group		t-value	Level of Significance
		Mean	S.D.		
Pre-test	21	14.67	4.553	**1.744**	significant at 0.05 level
Post-test	21	15.95	4.444		
				df = 20, t value = 1.725	

Graph 1 showing the differences in mean and standard deviation in the Pre-test and the post- test scores of students of control group



Interpretation

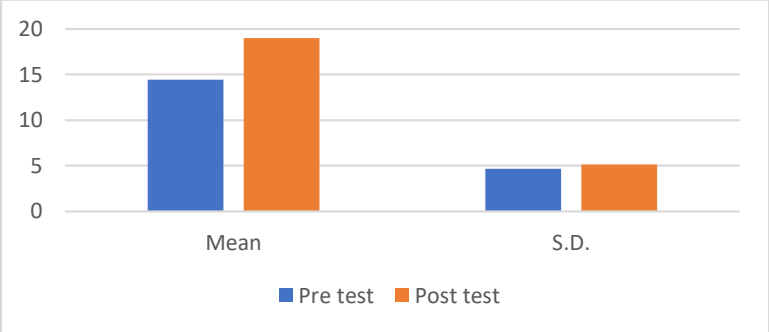
The control group pre-test reported Mean and Standard deviation scores M=14.67 (S.D.=4.553) and post-test scores M= 15.95, (S.D.= 4.444) The t value obtained is *1.744*, p<0.05. As the obtained '*t*' value 1.744 is more than the table value *df (20)*= 1.725 at 0.05 level of significance, the research hypothesis is accepted and the null hypothesis is rejected. It is apparent from Table 1 that there is a significant difference in the in the Pre-test and the post- test scores of academic performance of students of the control group.

Hypothesis 2: There is a significant difference in the academic performance of students of the experimental group before and after the intervention program.

Table 2 showing differences in mean, standard deviation and *t*-value in the academic performance of students of the experimental group before and after the intervention program.

Description	N	Experimental Group		t-value	Level of Significance
		Mean	S.D.		
Pre-test	21	14.43	4.675	**5.164**	Significant at 0.05 level
Post-test	21	19.00	5.128		
				df = 20, t value = 1.725	

Graph 2 showing differences in mean and standard deviation scores in the academic performance of students of the experimental group before and after the intervention program.



Interpretation

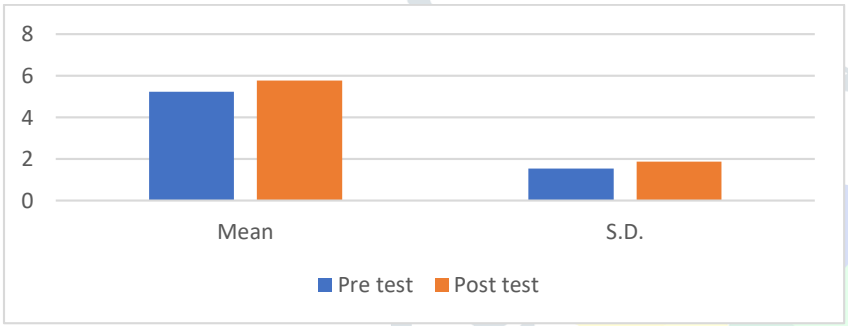
The experimental group pre-test reported Mean and Standard deviation scores M=14.43 (S.D.=4.675) and post-test scores M= 19.00, (S.D.= 5.128). The t value obtained is *5.164*, p<0.05. As the obtained '*t*' value 5.164 is more than the table value *df (20)*= 1.725 at 0.05 level of significance, the research hypothesis is accepted and the null hypothesis is rejected. It is apparent from Table 2 that there is a significant difference in the academic performance of students in the experimental group before and after the intervention.

Hypothesis 3 : There is a significant difference in the pre-test and the post- test scores with regard to the knowledge level of students of the control group.

Table 3 showing differences in mean, standard deviation and *t*-value in the Pre-test and the post- test scores with regard to knowledge level of students of the control group

Description	N	Control Group		t-value	Level of Significance
		Mean	S.D.		
Pre-test	21	5.24	1. 546	**1.672**	Not significant at 0.05 level
Post-test	21	5.76	1.868		
				df = 20, t value = 1.725	

Graph 3 showing differences in mean and standard deviation in the Pre-test and the post- test scores of students of the control group.



Interpretation

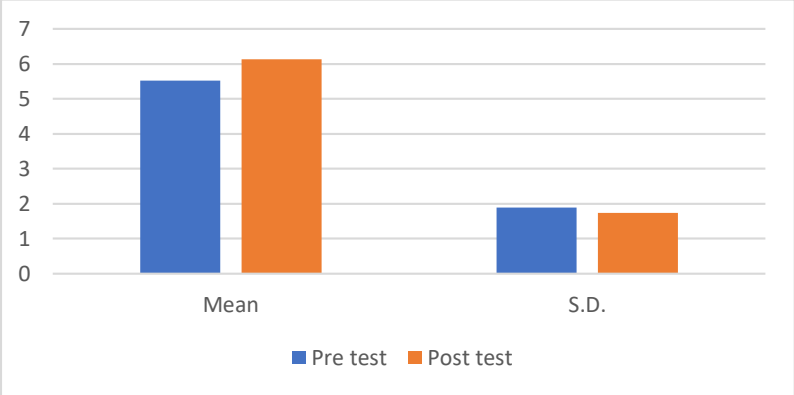
The control group pre-test reported Mean and Standard deviation scores M=14.43 (S.D.= 1.546) and post-test scores M= 5.76, (S.D.= 1.868). The t value obtained is *1.672*, p<0.05. As the obtained '*t*' value 1.672 is less than the table value *df(20)*= 1.725 at 0.05 level of significance, the research hypothesis is rejected and the null hypothesis is accepted. It is apparent from Table 3 that there is no significant difference with regard to the knowledge level of students of control group.

Hypothesis 4: There is a significant difference with regard to the knowledge level of students of the experimental group before and after the intervention program.

Table 4 showing differences in mean, standard deviation and *t*-value in the knowledge level of students of experimental group before and after the intervention program.

Description	N	Experimental Group		t-value	Level of Significance
		Mean	S.D.		
Pre-test	21	5.52	1. 887	**1.625**	Not significant at 0.05 level
Post-test	21	6.14	1.740		
				df = 20, t value = 1.725	

Graph 4 showing the differences in mean and standard deviation of students of the experimental group before and after the intervention program



Interpretation

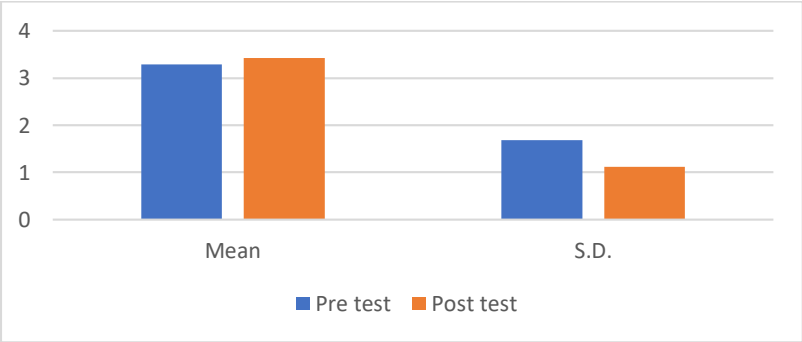
The experimental group pre-test reported Mean and Standard deviation scores M=5.52 (S.D.= 1.887) and post-test scores M= 6.14, (S.D.= 1.740). The t value obtained is *1.625*, p<0.05. As the obtained '*t*' value 1.625 is less than the table value *df (20)*= 1.725 at 0.05 level of significance, the research hypothesis is rejected and the null hypothesis is accepted. It is apparent from Table 4 that there is no significant difference with regard to the knowledge level of students of experimental group before and after intervention program.

Hypothesis 5: There is a significant difference in the Pre-test and the post- test scores with regard to the understanding level of students of the control group.

Table 5 showing differences in mean, standard deviation and *t*-value in the Pre-test and the post- test scores with regard to the understanding level of students of control group.

Description	N	Control Group		t-value	Level of Significance
		Mean	S.D.		
Pre-test	21	3.29	1. 678		Not significant at 0.05 level
Post-test	21	3.43	1.121	**0.326**	
					df = 20, t value = 1.725

Graph 5 showing the differences in mean and standard deviation in the Pre-test and the post- test scores with regard to the understanding level of students of the control group.



Interpretation

The control group pre-test reported Mean and Standard deviation scores M=3.29 (S.D.= 1.678) and post-test scores M= 3.43, (S.D.= 1.121). The t value obtained is *0.326*, p<0.05. As the obtained '*t*' value 0.326 is less than

the table value *df (20)*= 1.725 at 0.05 level of significance, the research hypothesis is rejected and the null hypothesis is accepted. It is apparent from Table 5 that there is no significant difference with regard to the understanding level of students of the control group.

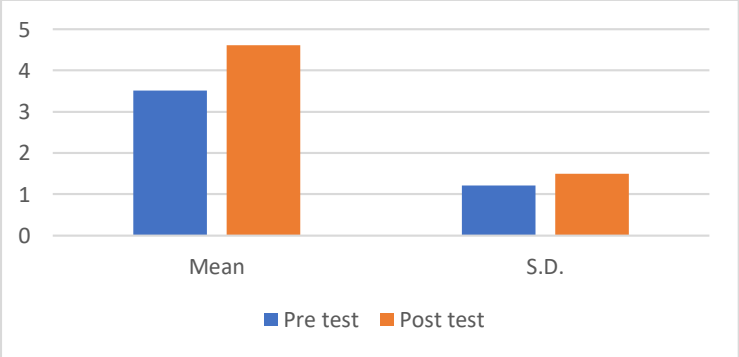
Hypothesis 6: There is a significant difference with regard to the understanding level of students of the experimental group before and after the intervention program.

Table 6 showing differences in mean, standard deviation and *t*-value in understanding level of students of the experimental group before and after the intervention program.

Description	N	Experimental Group		t-value	Level of Significance
		Mean	S.D.		
Pre-test	21	3.52	1. 209	**3.246**	Significant at 0.05 level
Post-test	21	4.62	1.499		

df = 20, t value = 1.725

Graph 6 showing the differences in mean and standard deviation in understanding level of students of experimental group before and after the intervention program.



Interpretation

The experimental group pre-test reported Mean and Standard deviation scores M=3.52 (S.D.= 1.209) and post-test scores M= 4.62, (S.D.= 1.499). The t value obtained is *3.246*, p<0.05. As the obtained '*t*' value 3.246 is greater than the table value *df(20)*= 1.725 at 0.05 level of significance, the research hypothesis is accepted and the null hypothesis is rejected. It is apparent from Table 6 that there is a significant difference with regard to the understanding level of students of experimental group before and after the intervention program.

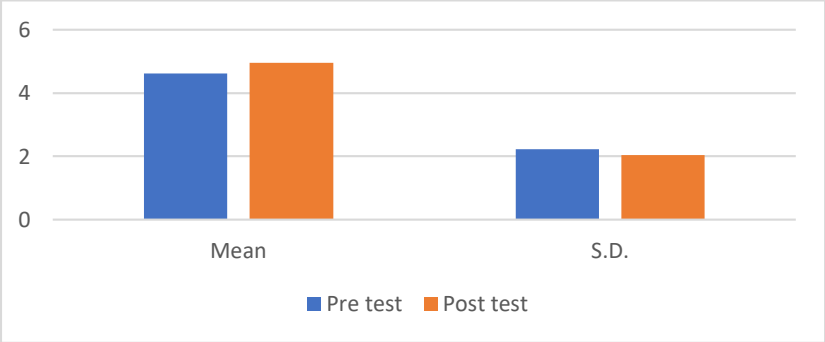
Hypothesis 7: There is a significant difference in the Pre-test and the post- test scores with regard to the application level of students of the control group.

Table 7 showing differences in mean, standard deviation and *t*-value in the Pre-test and the post- test scores with regard to the application level of students of the control group.

Description	N	Control Group		t-value	Level of Significance
		Mean	S.D.		
Pre-test	21	4.62	2.224	**0.638**	Not significant at 0.05 level
Post-test	21	4.95	2.037		

df = 20, t value = 1.725

Graph 7 showing the differences in mean and standard deviation **in the Pre-test and the post- test scores with regard to the application level** of students of the control group.



Interpretation

The control group pre-test reported Mean and Standard deviation scores M=4.62 (S.D.= 2.224) and post-test scores M= 4.95, (S.D.= 2.037). The t value obtained is *0.638*, p<0.05. As the obtained '*t*' value 0.638 is less than the table value *df (20)*= 1.725 at 0.05 level of significance, the research hypothesis is rejected and the null hypothesis is accepted. It is apparent from Table 7 that there is no significant difference with regard to the understanding level of students of control group.

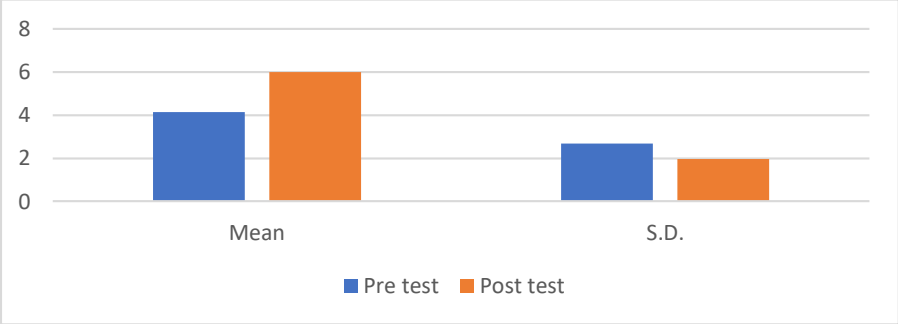
Hypothesis 8: There is a significant difference with regard to the application level of students of experimental group before and after the intervention program.

Table 8 showing differences in mean, standard deviation and *t*-value in the application level of students of experimental group before and after the intervention program.

Description	**N**	**Experimental Group**		**t-value**	**Level of Significance**
		Mean	S.D.		
Pre-test	21	4.14	2.670	**2.965**	Significant at 0.05 level
Post-test	21	6.00	1.975		

df = 20, t value = 1.725

Graph 8 showing differences in mean and standard deviation of students of experimental group before and after the intervention program.



Interpretation

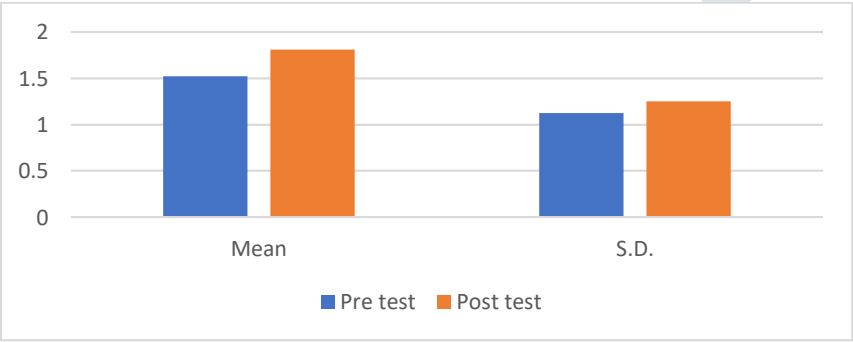
The experimental group pre-test reported Mean and Standard deviation scores M=4.14 (S.D.= 2.670) and post-test scores M= 6.00, (S.D.= 1.975). The t value obtained is *2.965*, p<0.05. As the obtained '*t*' value 2.965 is greater than the table value *df(20)*= 1.725 at 0.05 level of significance, the research hypothesis is accepted and the null hypothesis is rejected. It is apparent from Table 8 that there is a significant difference with regard to the application level of students of experimental group before and after the intervention program.

Hypothesis 9 : There is a significant difference in the Pre-test and the post- test scores with regard to the evaluation skill of students of the control group.

Table 9 showing differences in mean, standard deviation and *t*-value in the evaluation skills of students of control group before and after the intervention program.

Description	N	Control Group		t-value	Level of Significance
		Mean	S.D.		
Pre-test	21	1.52	1.123	**0.923**	Not significant at 0.05 level
Post-test	21	1.81	1.250		
				df = 20, t value = 1.725	

Graph 9 showing the differences in mean and standard deviation of students of control group before and after the intervention program.



Interpretation

The control group pre-test reported Mean and Standard deviation scores M=1.52 (S.D.= 1.123) and post-test scores M= 1.81, (S.D.= 1.250). The t value obtained is *0.923*, p<0.05. As the obtained '*t*' value 0.923 is greater than the table value *df(20)*= 1.725 at 0.05 level of significance, the research hypothesis is rejected and the null hypothesis is accepted. It is apparent from Table 9 that there is no significant difference with regard to evaluation skills of students of control group.

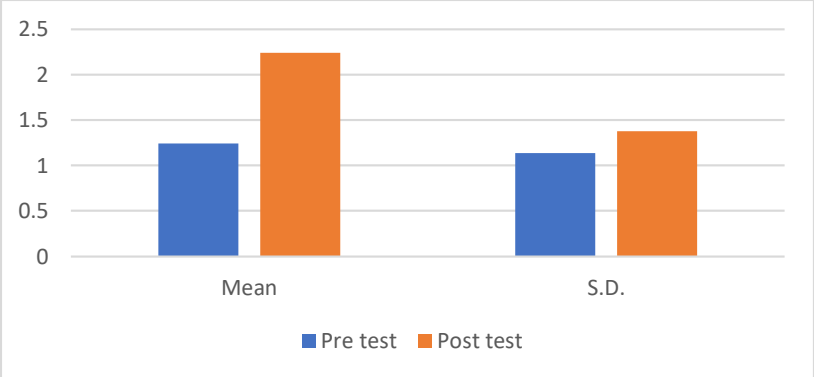
Hypothesis 10: There is a significant difference with regard to the evaluation skill of students of the experimental group before and after the intervention program.

Table 10 showing differences in mean, standard deviation and *t*-value in the evaluation skills of students of the experimental group before and after the intervention program.

Description	N	Experimental Group		t-value	Level of Significance
		Mean	S.D.		
Pre-test	21	1.24	1.136	**2.646**	Significant at 0.05 level
Post-test	21	2.24	1.375		

df = 20, t value = 1.725

Graph 10 showing the differences in mean and standard deviation of students of experimental group before and after the intervention program.



Interpretation

The experimental group pre-test reported Mean and Standard deviation scores M=1.24 (S.D.= 1.136) and post-test scores M= 2.24, (S.D.= 1.375). The t value obtained is *2.646*, p<0.05. As the obtained '*t*' value 2.646 is greater than the table value *df(20)*= 1.725 at 0.05 level of significance, the research hypothesis is accepted and the null hypothesis is rejected. It is apparent from Table 10 that there is a significant difference with regard to evaluation skills of students of experimental group before and after the intervention program.

Findings of the study

1. There is a significant difference in the academic performance of experimental and control group before and after the intervention program. The t-value shows that students in experimental group performed better than control group. This result shows that Blended Learning program is effective in improving the academic performance of B. Ed. teachers.
2. There is no significant difference in the academic performance of experimental group and control group before and after intervention with regard to their knowledge level.
3. There is a significant difference in the academic performance of experimental group and control group before and after intervention with regard to their understanding level.
4. There is a significant difference in the academic performance of experimental group and control group before and after intervention with regard to their application level.
5. There is significant difference in the academic performance of experimental group and control group before and after intervention with regard to their evaluation skills.

Educational Implications

- The study reveals that Blended Learning approach provide a higher levels of student participation and fostering intellectual interactions.
- Training student teachers on strategies, types and implementation of Blended learning program is a pre-requisite for establishing blended learning program in higher education.
- Teacher educators, student teachers and education system should intend to continue to explore the use of technology-facilitated learning to optimize the teaching and learning potential.
- Flexibility in teaching learning process, which involves self-learning (online) and face-to-face learning helps in increasing academic performances.
- This approach appeals and caters to the need of diverse learners.
- Teachers should be trained in self-learning strategies to enhance blended learning potentials in classroom transactions
- Classroom motivating environment could be created through utilizing all the available resources inside and outside the walls.
- Blended learning approach provides significant contributions to students' learning with the qualities required by the age and lifelong learning skills by offering blended learning opportunities to teachers and students, especially in universities.
- In addition, the blended learning model has the potential to enable preservice teachers to become lifelong learners by developing their learning and resumption skills.

Recommendations

- The student teacher should develop their computer and internet literacy rate for a smooth classroom transaction using blended learning approach.
- It is recommended that high levels of student motivation and engagement should be provided as a core feature of the technology-enhanced learning experience.
- Higher educational institutes to provide training within the B. Ed. curriculum on the application of blended learning.
- Blended Learning approach helps pre service teacher to actively benefit from educational technologies and related approaches throughout their professional life.
- As the concept of blended learning is new to Indian education system, therefore, adequate initiatives must be taken for the development of blended instructional-based strategies.

Conclusions

To bring in an objective-oriented blended learning environment in classroom transactions, innovative pedagogical approaches through the use of technology in teaching and learning is necessary. The result of this study shows that the Blended Learning Programme can provide support to the acquisition of effectiveness in teacher education programmes. The intervention plan developed based on the Blended Learning approach provides more information to the student teachers. The teacher can plan the teaching and learning activities based on various pedagogical approaches which can be incorporated with the blended learning approach. This includes a constructivist approach to education which emphasize on how learners are facilitated to contribute to their own educational experiences. Although, the blended learning approach cannot completely replace teachers. Teaching is only replaced by learning through active engagement and interaction.

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