



Hybridization of Teacher Education: The Win - Win Path

KEYWORDS

Blended learning, ICT, Hybrid learning and Teacher Education

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ABSTRACT

Information and communication technologies (ICTs) are a major factor in shaping the new global economy and producing rapid changes in society. Within the past decade, the new ICT tools have fundamentally changed the way people communicate and do business. They have produced significant transformations in industry, agriculture, medicine, business, engineering and other fields. They also have the potential to transform the nature of education in general and teacher education in particular therefore this study intends to analyse the effectiveness of blended learning. This study is a two group matched pair experimental study with blended learning as independent variable on B.Ed. student teachers. Through blended learning the achievement across all personal variables chosen stands testimony to infuse modern methods of delivery in education.

Introduction

The computers with their tremendous working capacity coupled with excellent progress in the field of electronics and communication technology have bestowed enormous power and abilities to human beings. As per S.K. Mangal (2010) teaching and learning that entirely happened to be a domain of the human factors –teachers and students is now no longer limited to its conventional boundaries or ways and means. It has gradually evolved into a subject of technological progress. Research in the field of computer operation, net working and development of various hardware and software tools have almost revolutionized the field of teaching and learning.

e learning is an abbreviation of the term electronic learning. It is a very broad term and is used to describe any type of learning environment that is computer enhanced. The term e learning in the most general sense refers to the use of computers and communication technologies in the teaching learning process, with the intention to enhance its effectiveness.

e learning may be understood as an innovative technique or a form of ICT used in providing learning experiences to the students through on line by using internet services and web technology. However in practice the use of the term is not limited to internet and web technology alone. Therefore present day e learning can be termed as learning carried out, supported and facilitated by the advanced multimedia facilities as well as internet and web technology delivered to the end users in computers, laptops and mobile ICT applications.

Statement of the problem

Teachers are the pillars of any nation. It is imperative to make them technically sound and professionally confident to create knowledge society. This formidable task of nation building can be achieved only with the help of hybrid learning environments. It is the need of the hour to think of the various possibilities of integrating the conventional face to face class room environment with e learning environment. Hence the problem of the present study is stated thus "Effectiveness of Blended Learning in Teacher Education."

Review of Related Studies

Sorbie, Jill (2015) studied the blended learning methodology as a way to personalize and engage students, research also documents the widespread hesitation among educators when it comes to embracing technology. Findings show that these teachers believe that blended learning promotes individualization, collaboration, organization, engagement, real-world relevance, and student-centered learning.

Maas, Patricia's (2015) work was a comparative case study on the implementation of "blended learning," or the combined use of virtual and face-to-face learning, in three schools. The findings of the study contribute to theory on the implementation of innovative methods, such as blended learning, in schools and raise important questions for future research.

Harig, Curt R. (2015) studied the effectiveness of implementing blended learning methodologies into conventional face to face courses for Special Operations Forces ("SOF") students. This study discovered that the implementation of a blended learning environment enhanced the educational experience for students and faculty members supported the incorporation of information technology in their course.

LaVergne, Debra Kaye (2014) examined the perceived attitudes of blended learning faculty and students by quantitative research. Themes that emerged from the open-ended responses included the focus on flexibility, technology, self-efficacy, and communication.

Leake, Stephanie (2014) by a mixed-methods study investigated professional development outcomes for teachers participating in district sponsored teaching professional development. Outcomes of the professional development were measured using pre-and post- instructional belief surveys, participant satisfaction surveys, and interviews measuring retention of instructional beliefs and application of new instructional strategies. Non-completers primarily cited lack of time for their withdrawal, but expressed an interest in future blended learning courses.

Poon, Joanna (2014) presented the research findings of questionnaire surveys and interviews with academics teaching property courses in Australia and the UK. The questionnaire aimed to gather academics' views on blended learning, their reasons for using blended learning as a teaching method, their design of blended learning courses and the support they provide to students on dealing with web technology. The conclusion drawn from this research is that "time" and the size of the country influence the use of blended learning.

Objectives of the study

The following are the objectives of the study.

1. To integrate the personal touch of conventional face to face learning and e-learning in teacher education.
2. To develop an instructional strategy for blended learning

model for teaching at B.Ed. level.

3. To find out the effectiveness of blended learning method over conventional method in learning Bloom's taxonomy and preparation of objective test.

4. To find out the difference in achievement between control and experimental group student teachers of rural and urban locality.

5. To find out the difference in achievement between control and experimental group student teachers having and not having a tablet PC.

6. To find out the difference in achievement between control and experimental group student teachers playing video games rarely and often.

7. To find out the relationship between achievement and related objectives like knowledge, understanding and application.

Hypotheses of the study

The following are the hypotheses of the study.

1. There is no significant difference in the pre test scores between the control and experimental group student teachers.

2. There is no significant difference in the post test scores between the control and experimental group student teachers.

3. There is no significant difference in the post test scores between the control and experimental group student teachers from rural locality.

4. There is no significant difference in the post test scores between the control and experimental group student teachers from urban locality.

5. There is no significant difference in the post test scores between the control and experimental group student teachers not having a tablet PC.

6. There is no significant difference in the post test scores between the control and experimental group student teachers having a tablet PC.

7. There is no significant difference in the post test scores between the control and experimental group student teachers playing video games rarely.

8. There is no significant difference in the post test scores between the control and experimental group student teachers playing video games often.

9. The post test achievement of student teachers learning through blended method does not have any correlation with the objectives like knowledge, understanding and application.

Methodology

To study the effectiveness of blended learning strategy, the Pre-test, Treatment, Post-test equivalent group experimental design was adopted in the study.

Population and sample of the study

The entire pool of student teachers present in the country may be considered as the population for the present study. Owing to time, economic and executive constraints it is limited to a particular area. A sample of 60 B.Ed student teachers comprising various optional subjects were selected for the study as the control group subjects and 60 B.Ed student teachers comprising various optional subjects from integrated programme were selected as the experimental group subjects. They were selected through purposive sampling technique.

Tools and Techniques

1. Achievement test in the content area of research constructed and validated by the investigator.

Data Analysis

Descriptive statistics was used to describe the sample with reference to the variable taken for this study. The dependant variable in the study is the achievement of student teachers in Education. The significance of difference between the means of experimental and control group student teachers in their achievement was analyzed using the 't' test.

Table 1.1 Significance of mean in pre and post tests and sub variables

Variables	Group	N	Mean	Std.dev	t-value	p-value
Pre test - Full	Cont.	60	3.25	1.60	0.372	0.711
	Exp.	60	3.15	1.68		
Post test - Full	Cont.	60	11.12	3.61	20.49*	0.000
	Exp.	60	21.33	2.83		
Rural locality	Cont.	31	11.80	3.70	11.49*	0.000
	Exp.	30	21.23	2.63		
Urban locality	Cont.	29	10.37	3.41	13.09*	0.000
	Exp.	30	21.43	3.04		
Not having a tablet PC	Cont.	31	10.54	3.08	14.98*	0.000
	Exp.	30	21.56	2.64		
Having a tablet PC	Cont.	29	11.72	4.06	10.03*	0.000
	Exp.	30	21.10	3.02		
Playing Video games rarely	Cont.	30	11.00	3.98	11.81*	0.000
	Exp.	31	21.29	2.67		
Playing Video games often	Cont.	30	11.23	3.25	12.39*	0.000
	Exp.	29	21.37	3.02		

* Significant at 0.01 level

Hypothesis testing for achievement in education

Testing the significance of difference between the mean scores of pre-test

The mean score of achievement for the control group in the pre test and post test are 3.25 and 3.15 respectively. The t value of 0.372 with a p value of 0.711 is not significant at 0.05 level as shown in table 1.1. It is concluded that the control and experimental group student teachers do not differ in their achievement in pre test.

Testing the significance of difference between the mean scores of post-test

The significance of difference between the means of control group and experimental group student teachers in their post-test achievement is shown in table 1.1 and in figure 1.1.

The calculated value of 't' is significant at 0.01 level of significance. This makes it obligatory to reject the above said null hypotheses number 2 - 9. It is concluded that there is significant difference between the experimental and control group student teachers in their achievement in education. The experimental group students are at a higher level than the control group students in their achievement in almost all the sub variables taken for the study and therefore it is inferred that blended learning method is effective over conventional method. It is also concluded that student teachers irrespective of their locality of stay that is rural or urban, possession of a tablet PC or not and their habit of playing video games rarely or often in all cases of sub variables the experimental group counterparts have achieved remarkably better than the control group subjects.

Effect size analysis

Effect size analysis was carried out using pooled standard deviation to find out the relative effectiveness of the blended learning strategy over the conventional method and to prove the t value. The mean score of control and experimental group

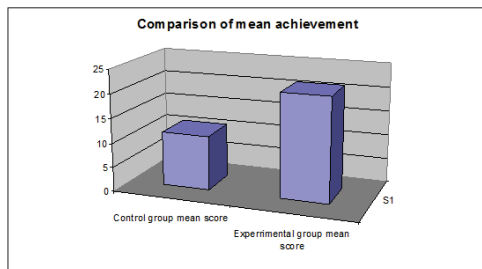


Fig. 1.1 Comparison of achievement

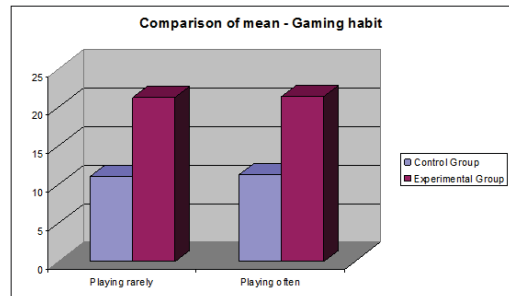


Fig. 1.4 Comparison of achievement with reference to the habit of playing video games

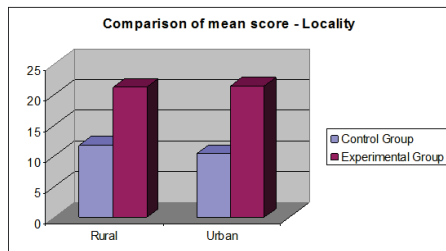


Fig. 1.2 Comparison of achievement by locality

are 11.11 and 21.33 respectively with a pooled standard deviation of 3.22. Effect size 0.8450 and Cohen's d 3.16 for the achievement of the student teachers are significantly high to be a statistical evidence for relatively higher mean score of the experimental group.

Testing the significance of correlation between the mean scores of post-test

Achievement and other objectives

The significance of correlation between the mean score of experimental group student teachers achievement with its objective components like knowledge, understanding and application are shown in table 1.2

Table 1.2 The significance of correlation between the mean score of experimental group student teachers achievement with components of objectives

Variables	N	'r'
Achievement Vs Knowledge	60	0.547**
Achievement Vs Understanding	60	0.824**
Achievement Vs Application	60	0.431**

** Correlation is significant at 0.01 level.

The calculated 'r' value between achievement and knowledge 0.547 and significant at 0.01 level. There is significant positive correlation at 0.01 level between achievement and other objectives like understanding and application with r value of 0.824 and 0.431 respectively. These significant 'r' values make it obligatory to reject hypothesis number nine. It is inferred that understanding and achievement have significant correlation in blended learning strategy to make an inference that blended learning method fosters understanding.

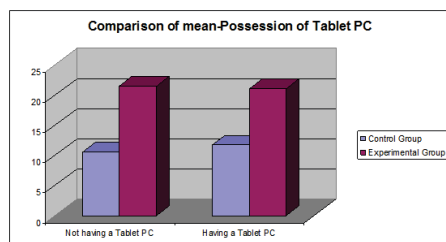


Fig. 1.3 Comparison of achievement with reference to possession of tablet PC

Gain score analysis

Gain score analysis was carried out to find out the relative effectiveness of the blended learning strategy over the conventional method. The instructional objectives were same for the pre-test and post-test. The gain scores are the measures to study the effectiveness of blended learning strategy in improving the achievement of the student teachers. The mean gain percentage for the control and experimental groups are 26.19 and 60.55 respectively and strongly underline the impact of blended learning strategy. The large effect size for achievement reveals the effectiveness of blended learning strategy. It is interpreted that the effect of blended learning strategy is of great magnitude when comparing with the conventional teaching.

Findings of the Study

The following are the findings of the study

1. It is found that there is no significant difference in the pre test achievement in education between the control and experimental group student teachers.
2. It is found that there is significant difference in the post test achievement in education between the control and experimental group student teachers. The student teachers studied through blended method have performed better over their counterparts who studied through conventional method.
3. It is found that there is significant difference in the post test achievement between the control and experimental group student teachers from rural and urban locality. The student teachers studied through blended method have significant mean scores over their control group member studied through conventional method. This gives a proof to the interpretation that blended learning irrespective of the locale is penetrative to make result and the educational planners need not worry much about the rural urban divide.
4. It is found that there is significant difference in the post test achievement between the control and experimental group student teachers having or not having a tablet PC. The student teachers studied through blended method have significant mean scores over their control group member studied through conventional method. This gives a evidence to the fact that blended learning irrespective of the possession of a personal digital assistant has got a significant role to play.
5. It is found that there is significant difference in the post test achievement between the control and experimental group student teachers having the practice of playing video games rarely and often. The student teachers studied through blended method have higher mean scores over their control group member studied through conventional method. This stands testimony to the fact that blended learning irrespective of having familiarity to digital cross media navigation is effective among young learners who are digital natives.

6. It is found that there is significant positive correlation between achievement and objectives like knowledge; understanding and application among which understanding has got strong correlation to make an inference that blended learning fosters better understanding over conventional method of teaching.

7. The gain score analysis found that blended learning strategy is very effective in improving the achievement of learners. The effect size analysis confirms the outcome of the large t value to stand testimony to the effectiveness of blended learning in teacher education.

Discussion of results with results of other studies

Findings of this study about achievement in education match with the study of Melek Yaman Dittmar Graf (2010) development, implementation and evaluation of cross national blended learning in biology. Dragana Bjekic Radojka Krneta Danijela Milosevic (2010) study revealed that in service teachers performed better than pre-service teachers but the present study establishes that pre service teachers also perform well with blended learning strategy. As in the study of Rehana Masrur (2010) on web based resource materials, this study also finds integration of ICT in teaching learning increased the understanding of subject related knowledge.

Serap Samsa's (2010) study on scenario based blended learning and attitude of pre service teachers revealed pre service teachers satisfaction over blended learning environment, this study's findings are also similar to those findings. The results of this study are similar to the findings of Bridget Melton and others (2009) highlighting the preference of blended delivery over conventional lecture method by learners.

Educational implications of the study

The study reveals that blended learning strategy is effective in improving the achievement in education at B.Ed. level. The overall outcome of the study underlines the effectiveness of blended learning strategy with large effect size in achievement of education of student teachers. The blended learning strategy will be helpful in augmenting the teaching learning process in the following ways,

1. Blended learning strategy is not fully technology dependent the teacher is having a major role to play with his creativity along with abundant e resources available in the web world. This will give the balance of human touch and technical advantage.
2. Cross media navigation is the integral part of blended learning. This will make the learners transform the abstract ideas in to concrete learning to enable the teacher to cover the syllabus in time.
3. With the advent of building knowledge society the increasing learner mass Can be easily accommodated through this strategy.

Scope for further study

The present study entitled "Effectiveness of Blended Learning in Teacher Education" is an investigation at B.Ed. level. It is suggested that further studies may be conducted in the following areas.

1. It is suggested that the same study can be carried out in core and elective subjects of B.Ed. curriculum.
2. It is suggested that the same study can be carried out in optional, core and elective subjects of other teacher education programmes like, D.T.Ed., M.Ed. and special education.
3. Blended learning strategy with reference to various subjects like, Agriculture, Engineering, Medicine and Law can be studied.

4. It is suggested that influence of other variables can also be investigated.

Efforts may be taken to develop and validate modules on all possible topics.

Conclusion

There is knowledge explosion and population explosion resulting in over crowded classes. The modern teacher has to teach more to more and to be a technical savvy. Individualization of instruction is a challenging task on the part of the teacher; this can be achieved only through supplementary devices based on educational technology. Unified knowledge can be achieved through various methods of instruction; in this context e- learning occupies the unique place as personal computers have become a part and parcel of family life. In the ancient Guru Kula system the student went in search of the teacher, thanks to technological revolution the teacher goes to the drawing room of the learner as e tutor. These changes are not only inevitable but essentially useful.

Based on the extensive observations and review there is a clear direction and feasibility to further empirically intensify the study of technology enabled learning based on the blended learning approach. Good teachers will remain the key to student learning, but they will routinely rely on a variety of technological tools. Technology will continue to be cheaper, more powerful, and more dispersive.

Technology can actually assist with some of our expectations and make teachers and their students more successful. However, as the world becomes more complex virtually year-to-year instead of the generation-to-generation pace of most of the last century, educational needs continue to shift from teaching and learning isolated skills and information within each content area, to teaching skills that enable students to solve complex problems across many areas. Yet a word of caution, technology alone cannot revolutionize education. Student teachers must be appropriately trained to shift, analyze and synthesize the wealth of information available if it is to make sense rather than just download pages of information, which is irrelevant. Teacher educators must prepare for a technology-rich future and keep up with change by adopting effective strategies that influence the student teachers with appropriate technologies based on psycho-pedagogical top up such as blended learning. Blended learning method does provide a theoretical basis, if they wish to motivate their students and bring about meaningful learning. Thus blended learning strategy today is the need of the hour to solve all our learning constraints.

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