EFFECT OF BLENDED LEARNING ON ACADEMIC ACHIEVEMENT OF RURAL HIGH ACHIEVERS AND LOW ACHIEVERS IN SCIENCE

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ABSTRACT

The students of today are accustomed to receiving information on a daily basis through internet. It's a challenge for educators to teach students in this new hi-tech learning environment and blended learning could be one solution to this challenge. Blended learning has the potential to combine the best aspects of web-based learning with the strengths of a traditional classroom environment, creating a hybrid that transcends the limitations of both modes of learning. Blended learning offers students an efficient way to expand their educational options without the social costs of leaving their traditional, "brick and mortar" school behind. In the present paper the author tries to study the effect of Blended Learning *on Academic Achievement of Rural High Achievers and Low Achievers in Science. This study is an experimental one and conducted in Kurukshetra district of Haryana. The investigator has taken 60 secondary school students from Shrimati Keseri Devi Public Lohia Jairam Public School, Lohar Majra, Kurukshetra by using simple random sampling technique. For conducting experiment the investigator has used two group randomized pre-test and post-test design. For collection of data the investigator has used an achievement test constructed and standardized by the investigator and t-test was used for analysis and interpretation of the data. The result of the study reveals that blended learning is better method to teach both low achievers and high achievers than traditional class.*

***Keywords*:** Blended Learning; low achievers and high achiever

Introduction

As we know internet is changing the way people work and play, the latest generation of web-based learning tools (learning management systems, online collaborative environments and social networks) are changing the way students learn. These changes are allowing students to connect with a wider range of exceptional teachers, mentors and coaches outside the boundaries of geography and time. Distance learning was long been an accepted method of serving students in remote areas, and in the present scenario as web-based technology grows more sophisticated, the potential benefits to both rural and urban students continues to expand as well and blended learning appears poised to fill an ever-expanding gap. Blended learning is both simple and complex. At its simplest, blended learning is the thoughtful integration of classroom face-to-face learning experiences with online learning experiences. There is considerable intuitive appeal to the concept of integrating the strengths of synchronous (face-to-face) and asynchronous (text-based Internet) learning activities. Blended learning has the potential to combine the best aspects of web-based learning with the strengths of a traditional classroom environment, creating a hybrid that transcends the limitations of both modes of learning. Blended learning offers students an efficient way to expand their educational options without the social costs of leaving their traditional, "brick and mortar" school behind. Blended learning is the ideal learning process in that initially the learners complete an online course to gain knowledge in the subject matter and then proceed onto the classroom portion to reinforce what was learned through the practical application of the concepts. Blended learning is implemented in a variety of ways, ranging from models in which curriculum is fully online with face-to-face interaction to models in which face-to-face classroom instruction is integrated with online components that extend learning beyond the classroom or school day. The rapid growth of blended learning has been a catalyst for additional instructional transformation. Bhattacharya (1999) investigated the critical view of work done on the use of computer as instructional tool for teaching chemistry combined with the traditional method. The main objectives of the study were to aim at developing tools for evaluating the effectiveness of available software in chemistry study and development of software in different areas of chemistry. The combination of smart class a digital initiative and face-to-face classroom instruction is rapidly transforming the way teachers teach and students learn in schools with innovative and meaningful use of technology powered by world's largest repository of knowledge right next to the blackboard for teachers in the classrooms. Students

learn difficult and abstract curriculum concepts by watching highly engaging visuals and animations. This makes learning an enjoyable experience of students while improving their overall academic performance in school. Smart class also enables teachers to assess and evaluate the learning achieved by their students in class with an innovative assessment technology. Natrajan (2004) evaluated technology enhanced learning and future of education. The objective of the study was to describe the several aspect of relating to TEL, the roll of multimedia and CD-Rom technology, role and impact of internet, e-learning.

Blended learning requires

• Evolving pedagogy in which teachers' roles include facilitation, student mentoring and differentiating instruction for individual learners.

• Increased flexibility and personalization of students' learning experiences.

• Strategic uses of technology to tap the capabilities of the learning management systems to support a wider range of instructional programs.

Educators may support blended learning because of its unique abilities to provide students with enriched learning experiences, to extend learning beyond the school day, and to support more successful differentiated learning strategies that personalize students' educational experiences. Additionally, as educators gain more experience with the approaches to blended learning, they may discover that this instructional model helps them increase capacity without commensurate increases in budget or staff. Blended-learning is a means of education that incorporates self-motivation, communication, efficiency, and technology in day to day learning environment. A number of other terms are also used to describe this mode of teaching and learning. They include online learning, virtual learning, network and web based learning. Fundamentally they all refer to educational processes that utilize information and communication technology to mediate asynchronous as well as synchronous learning and teaching activities. Blended learning environment has a smart class which is fully digital with highly engaging visuals and animations. This makes learning an enjoyable experience of students while improving their overall academic performance in school. Blended class room environment has unique delivery model. A knowledge center is created inside the school equipped with the entire library of smart class digital content. The knowledge centre is connected to smart room through intranet. Teachers get

relevant digital resources such as animations and videos interactive virtual labs tools etc. and use them as a part of their lesson plan. The student and the teacher are involved in an interactive dialogue. The range and quality of interactive dialogue is facilitated through blended learning. The range and quality of interactive dialogue is congruent with the widely accepted means of facilitating critical thinking and higher-order learning. Hudson (2002) argues, for example, "that the very basis of thinking is rooted in dialogue, drawing on a socially constructed context to endow ideas with meaning" In blended classroom science teacher can use a diagram drawer which plays a step by step line drawing animation. Teacher can get a brilliant teaching idea by clicking on teaching idea icon before teacher commences teaching or use topic synopsis or mind map to recapitulate the salient points of a lesson or concept taught. There are worksheets, web links for more information on lessons/topics taught. Debi (2003) concluded that students performed better when exposed to program teaching material as compared to the traditional method of teaching.

Benefits of blended learning

- Improves teachers effectiveness and productivity in class
- It brings abstract and difficult curriculum concepts inside classrooms.
- Makes learning an enjoyable experience for students.
- Improves academic performance of students.
- Enables instant formative assessment of learning out comes in class.
- It also enables teachers to instantly assess and evaluate the learning achieved by their students in class.

Objectives of study

- To study the difference in the effect of blended learning on academic achievement of low achievers in science
- To study the difference in the effect of blended learning on academic achievement of high achievers in science

Hypotheses

- There exists a significant difference between the academic achievement of low achievers before and after getting instructions in blended learning environment according to their pre-test and post-test
- There exists a significant difference between the academic achievement of high achievers before and after getting instructions in blended learning environment according to their pre-test and post-test

2. METHOD AND DESIGN OF THE STUDY

The present study was experimental in nature. After studying the review of related literature and considering the objectives of the study, Two group randomized, matched pre-test and post-test was to determine the effect of smart class on academic achievement of secondary school low and high achievers in science.

2. 1. Sampling

All items in the field of inquiry constitute a universe or population. The selected respondents from the population which is technically called a sample. The investigator has taken 60 secondary school students as a sample. The classifications of the students as sample are given below

60 Students : 30 Low Achievers, 30 High Achievers

2. 2. Tools used

For collecting the data investigator has used an achievement test constructed by her.

2. 3. Construction of achievement test

Following steps were followed to make achievement test:

(a) Planning of the test: The construction of tests were carried out by consideration of limitation under which the tests were developed. The expert opinions were taken for the construction of the tests. The items of both tests were prepared in English language and covered the topic "properties of metals". 50 questions were planned to conduct the test. Students were asked to complete the test in 50 minutes.

(b) Validity of the test: To final out what the test measures, it was decided to determine its face validity. For this, the expert's opinion had been considered.

2. 4. Statistical technique used

The collected data were analyzed to find out the initial difference if any, between the pre-test scores of the groups using t-test. After that, to determine the effect of teaching through both methods and to find out the extent of use of both methods by teachers, the scores were again subjected to t-test analysis.

3. RESULT ANALYSIS AND MAIN FINDINGS

3. 1. Results pertaining to the difference in effect of blended classroom learning environment on academic achievement of low achievers in science

In order to find out the difference in the effect of blended classroom learning on academic achievement of secondary school students of low achievers in science t-ratio was calculated and result is presented Table 1.

Table 1. Comparison of low achievers students on pre-test and post-test.

Group	Method of Instruction	N	Mean	SD	df	S Ed	t- ratio
	Blended Learning	30	0.64	30.10	58	1.25	3.28
	Traditional Learning	30	25.00	30.10			

Level of significance 0.05= 1.67, Level of significance 0.01 = 2.39

Table 1 depicts that the calculated t-ratio of low achievers before and after getting instructions in blended class room learning environment according to their pre-test and post-test is 3.28 which is

found to be significant at both levels Therefore, it can be interpreted that there exists a significant difference in the effect of teaching through blended learning environment on academic achievement of low achievers in science. Thus, the proposed hypothesis was accepted.

3. 2. Results pertaining to the difference in the effect of smart classroom learning Environment on academic achievement of high achievers in science

To find out the difference in the effect blended learning on academic achievement of secondary students of high achievers in science, t-value was calculated and result is presented in Table 2.

Table 2. Comparison of high achievers students on pre-test and post-test.

Method of Instruction	N	Mean	SD	df	SEd	t- ratio
Smart classroom Learning environment	30	0.64	3.16	58	0.93	4.69
Traditional Learning Environment	30	25.00	4.05			

Level of significance 0.05 = 1.67, Level of significance 0.01 = 2.39

The Table no. 2 depicts that the calculated t-ratio of high achievers before and after getting instructions in blended learning environment according to their pre-test and post- test is 4.69 which is found to be significant at both levels. Therefore, it can be interpreted that there exists a significant difference in the effect of teaching through smart class on academic achievement of high achievers in science. Thus, the proposed hypothesis was accepted.

Therefore, it can be interpreted that there exists a significant difference in the effect of teaching in blended classroom environment and traditional classroom environment on academic achievement of low achievers in science. Thus, the proposed hypotheses were accepted.

4. MAIN FINDING AND CONCLUSION

On the basis of analysis and interpretation of data, the following conclusion can be drawn.

1) There exists a significant difference in the effect of blended class room learning environment on academic achievement of low achievers of secondary students in science. The results shows that the students taught through blended learning have scored better on achievement test than students taught through traditional method. The reasons of performing well by students taught through blended class may be:

- blended learning helped to develop cognitive dimension.
- Reinforcement given to all students on every improvement.
- Organization of the corrective activities
- Formative tests conducted to find out the progress.
- Supplementary material provided to students.

2) There exists a significant difference in the difference of effect of blended classroom learning environment on academic achievement of high achievers of secondary students in science. The results shows that the students who are high achievers have also scored better academic achievement taught through blended learning class than taught through traditional method. The reasons of performing by high achievers may be:

- Motivation and Reinforcement given to all students on every improvement.
- Blended class room environment created much interest than traditional method
- Organization of the corrective activities.
- Formative tests conducted to find out the progress.
- Creation of enjoyable environment in class.

Suggestions

The researcher by virtue of his experience in conducting this study would like to put forward the following suggestions: Blended learning, combines teaching methods from both face-to-face and online learning, is an established, rapidly growing instructional model that is proving highly effective in helping schools and districts address the challenges of student achievement, limited resources, and the expectations of 21st century learners. It is extending classroom instruction

beyond the school day, supporting credit recovery programs, enhancing teacher professional development or delivering enriched learning opportunities for accelerated students, blended learning models are increasingly common practice across the curriculum for students and teachers alike.

- Sample size can enlarged to more concrete results.
- A sample study can be carried on primary level, senior secondary level, college level and university level students.
- Similar study can be analyzed by different statistical techniques for verifying the results
- Comparison can be made between boys and girls.
- The same study can be conducted on other topics of science also.
- The effectiveness of the methods can be seen by giving a longer duration of teaching.

Recommendations

Based on the finding and conclusions of the study the following recommendations are put forward. Blended class room learning help to increase the learning abilities of students and is proving highly effective in helping schools and districts address the challenges of student achievement, limited resources, and the expectations of 21st century learners. Blended class room environment can help teachers in teaching students with low IQ and high IQ level simultaneously. It is extending classroom instruction beyond the school day, supporting credit recovery programs, enhancing teacher professional development or delivering enriched learning opportunities for accelerated students, blended learning models are increasingly common practice across the curriculum for students and teachers alike.

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