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REASEARCH PAPER

A Study of Effectiveness of Blended Learning in Teaching of Science at Higher Secondary School

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Abstract

Teaching is not a mechanical process. It is an intricate, exacting and a very challenging one. The demand of new technology and uninterrupted global environment could not be met with the only source of classroom instruction. Blended learning is a formal education program in which a student learns at least in part through delivery of educational content with the best features of classroom instruction via digital and online media to personalize learning and to facilitate some element of student control over time, place, path, or pace. Educational methods have become advanced and changed dramatically in the last decade. The revolution in communication technologies, especially after the invention of the internet, has introduced new methods of teaching and new ways of managing education. Various Learning Management Systems, such as Web CT, Black Board and Learning Spaces are now available for these purposes. Both open source and commercial versions of these Learning Management Systems offer combined services such as creating learning material online and its distribution, facilitating communications between various users etc. The availability of Learning Management Systems has enabled stakeholders in creating a platform that aids in web-based teaching in a convenient and flexible manner. The present paper is an experimental study; the focus of the present paper is to examine theeffectiveness of Blended learning in teaching of Science at higher secondary school.

With the advent of ICT, electronic governance is an emerging trend to re-invent the way the government works and has become a new model of governance. Such a comprehensive and integrated system can also enable authorities to analyze the performance of one of the best performing institutes and compare it with other schools and colleges to identify the gaps. Through e-governance we can surely improve the quality of education system in India. E-governance can create the transparency between the universities, colleges and students. It will bring forth new

concepts of governance, both in terms of needs and responsibilities. Many problems of education system can be solved by the e-governance. This paper explains how e-governance enhances the quality of education. It describes need of introducing e-governance in education, areas of implementation of e-governance in education and initiatives taken by government in this direction.

1. Introduction

Blended learning can be defined as the combination of multiple approaches to pedagogy or teaching, e.g. self-paced, collaborative, tutor-supported learning or traditional classroom teaching. Blended learning often refers specifically to the provision or use of resources which combine e-learning with other educational resources. However, all of these concepts broadly refer to the integration (the "blending") of e-learning tools and techniques with traditional methods. Computer based learning is no longer regarded as an alternative to traditional forms of learning/teaching. It is integrated into a learning arrangement which combines those methods that have been selected for a specific learning purpose or environment. Blended learning is not really a new concept. Teachers have always been using 'combined resources'. Basically, blended learning is just a combination of teaching or facilitation methods, learning styles, resource formats, a range of technologies and a range of expertise. Blended learning is actually a sort of a return to traditional learning concepts. Traditional training also relies on phases of self-directed learning. In classical classroom training, the didactical strategy is based on the

• Presentation of content by a teacher / trainer

• Interaction between teacher and students and among students

• follow up of content presentation and exercises (homework), to be done individually or in groups /pairs.

Blended learning is an education program (formal or informal) that combines online digital media with traditional classroom methods requiring the physical presence of both teacher and student, with some element of student control over time, place, path, or pace. While students still attend "brick-and-mortar" schools with a teacher present, face-to-face classroom practices are combined with computer-mediated activities regarding content and delivery. Blended learning is also used in professional development and training settings.

The terms "blended learning", "hybrid learning", "technology-mediated instruction", "web-enhanced instruction", and "mixed-mode instruction" are often used interchangeably in research literature although the concepts behind blended learning first developed in the 1960s, the formal terminology to describe it did not take its current form until the late 1990s. One of the earliest uses of the term appears in a 1999 press release, in which the Interactive Learning Centers, an Atlanta-based education business, announced a change of name to EPIC Learning. The release mentions that "The Company currently operates 220 on-line courses, but will begin offering its Internet courseware using the company's Blended Learning methodology. The term "blended learning" was initially vague, encompassing a wide variety of technologies and pedagogical methods in varying combinations (some making no use of technology whatsoever). In 2006, the term became more concrete with the publication of the first *Handbook of Blended Learning* by Bonk and Graham. Graham challenged the breadth and ambiguity of the term's definition, and defined "blended learning systems" as learning systems that "combine face-to-face instruction with computer mediated instruction. In a report titled "Defining Blended Learning" researcher Norm Friesen suggests that in its current form, blended learning "designates the range of possibilities presented by combining Internet and digital media with established classroom forms that require the physical copresence of teacher and students."

2. Statement of the Problem:

“A Study of effectiveness of Blended learning in teaching of Science at higher secondary school”.

3. Definition of Terms and Operational Definition:

Study: In the present ‘study’ means and examination of student achievement after learning Science through Blended learning

Effectiveness: In the present study ‘effectiveness’ means impact of various strategies of teaching namely blended learning.

Blended Learning: According to the international encyclopedia of Education,blended learning means:-It is an education program (formal or informal) that combines online digital media with traditional classroom methods requiring the physical presence of both teacher and student, with some element of student control over time, place, path, or pace. While students still attend "brick-and-

mortar" schools with a teacher present, face-to-face classroom practices are combined with computer-mediated activities regarding content and delivery. Blended learning is also used in professional development and training settings.

Learning: In the present study 'learning' means gaining knowledge, skill and behavioral changes based on different teaching method using blended learning in Science.

Higher Secondary Level: Means a school having the distinctive stage of +2 stage under (10+2+3) pattern of education recognized by the Higher Secondary Education Board, Gandhinagar, Gujarat.

4. OBJECTIVES OF THE STUDY

- To study of effectiveness of blended learning on achievement in Science.
- To construct an achievement test in Science.
- To compare the effectiveness the blended learning in teaching of Sciences in relation to different approach.
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5. Hypothesis of the study

Ho1: There will be no significant difference between the mean score of students of ICT group and traditional group.

H02: There will be no significant difference between the mean score of students of ICT group and group discussion.

H03: There will be no significant difference between the mean scores of post test of group discussion and traditional group.

6. Variables of the study

Independent Variables:

Teaching approach: 1. Information communication & Technology approach

2. Group discussion approach

3. Traditional learning approach

Dependent Variables:

1. Score obtained by the students in achievement test

Control Variables:

1. Standard XI
2. Subject-Science (Selected chapter only)
3. Medium-Gujrati

Intervening variables:

1. Novelty in experiment
2. Understanding power
3. Grasping power

7. Delimitations of the study:-

The delimitations of the study are given below.

1. Present research will be limited only for Anand district of the state – Gujarat.
2. The blended learning approach will be used for the limited units from subject Science of standard XI.
3. Teaching will be done through blended learning approaches in respect to different problem on Science in the subject of Science.

8. Reasearch methodology and nature of the study:-

The present study is an experimental study. The investigator will work with one control group (taught through traditional approach)and two experimental group (ICT approach, group discussion method) .The nature of present study is quantitative and qualitative.

Research design for the present study

Group	Pre-test	Treatment	Post-test
Control group	-	Traditional approach	T2
Experimental group-1	-	ICT approach	T2
Experimental group-2	-	Group discussion approach	T2

9. Population and Sample

9.1 Population:-

The students of Gujarati medium of standard XI studying the Science subject of higher secondary of the school situated into Anand district of the state-Gujarat.

9.2. Sample:

Convenient sampling technique is used to select the sample. School of Gujarati medium is selected using convenient sampling technique .The sample of the present study is consist of 150 students chosen for the study from the school.

10. Research tools

Tools used for the present study were constructed with the help and guidance of anexpert. The following tools were used for data collection in the present study.

Tools constructed by investigator:

1. Achievement test in Science

11. Data analysis and interpretation:

The data was analyzed quantitatively and qualitatively by SPSS program.

12. Findings

1. The achievement of the students of ICT group is higher than GD group.
2. The achievement of the students of ICT group is higher than TD group.
3. The achievement of the students of GD group is higher than TL group.

13. Educational Implications

1. Teachers should accept ICT approach in their teaching of Science to make their teaching effective.
2. Teachers should develop their professional attributes to use ICT equipment.
3. Teachers should use different method of teaching Science according to the content of the unit.

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