

A Study of Effectiveness of E-Learning Strategy on Achievement of Early Grade Learners in Foundational Literacy

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ABSTRACT

The present experimental research study was undertaken in Prayogosala School, District Institute of Education and Training (DIET) and the general school of Bhadrak district of Odisha. This research study was based on to find out the effectiveness of e-learning strategy on learners' achievement in experimental and normal classroom processes. Most of the students were slow learners in Prayogosala and normal schools. The experiment was conducted a period of two months at two periods per day. The control group and normal group students were taught in the traditional method but the experimental group students learnt the foundational literacy through e-learning strategies. After intervention-based learning, it was revealed that the achievement level of Prayogosala school class-III learners was high in comparison to the traditional method in teaching the learning process in foundational literacy. Hence e-learning-based interventions were more effective than traditional methods of teaching and learning.

Keywords: e-learning strategy, ICT learning Early grade learners, Foundational literacy.

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INTRODUCTION

Communication and information technology has changed our life in one way or another with the development of information and communication technology, the term e-learning which is the acquisition, use, distribution, and facilitation of knowledge in the first phase by electronic means, has emerged. This type of learning depends on the internet and computer. Now digital technology has pervaded every field including education. The children of today have better exposure to digital technology. It is an era of E-learning, web learning, e-learning, and so on. So there is a greater need to employ digital technology in the teaching-learning process so that optimum human resource development can be ensured. The students who are generally unable to cope with the work normally expected of their age group are called slow learners (Transeley and Gulliford, 1962) these students with less than IQ 90 are traditionally slow learners. They are learning so slowly so they lag behind in learning development. They lack concentration, retention, and abstract thinking. As a result, they find it very difficult to keep up with their age group (RAMAR-2000).

Concept of E-Learning

E-learning covers a wide set of applications and processes such as web-based learning, computer-based, virtual classrooms, and digital collaboration. It includes the delivery of content via the internet, extranet, audio and video tape, satellite and CD-ROM. (publichino-2005). e-learning can be defined as learning opportunities delivered and facilitated by electronic gadgets. E-learning is considered a more effective way of teaching to large groups of students. However, when it is conferred with mobility, it allows the learners to have access to learning and information anytime and anywhere. Harmbrecht (2000) identifies the difference between e-learning and online learning e-learning represents the whole category of technology-based learning but online learning is actually a subject of e-learning. The term e-learning covers a wide set of applications, and processes, including computer-

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based learning, web-based learning, virtual classrooms and digital collaboration. It is technology-based learning but online learning constitutes just one part of technology-based learning and describes learning via the internet, intranet and extranet. It is web-based learning. There are five types of e-learning such as: (i) Technology-based learning (ii) Web-based learning (iii) Computer-based learning (iv) Synchronous e-learning and (v) Asynchronous e-learning. Technology-based learning includes the development of methods that use recent technological developments such as computer-mediated communications, video conferencing, multimedia, groupware, video on demand, desktop publishing, intelligent tutoring systems, and virtual reality just to name a few. Generally, web-based learning uses streaming media, text and graphics to develop an existing learning environment that is deployed right on the user via the internet. That is a great way to e-learning for the large group of people scattered across the globe but it can represent the same deployment challenge that the audience encounters in dial-up connecting. Computer e-learning is deployed via CD-ROM, which eliminates the streaming issues that can be associated with web-based learning. Synchronous e-learning are Internet telephony, web conferencing, online lectures, distance learning, audio, and video conferencing. Similarly, asynchronous e-learning means that the user can take the training independently of any schedule. For example self-paced courses via the internet as CD-ROM, stored audio, video level presentation or seminar.

However one of the first instances of online learning in the world can be traced back to 1960 at the University of Illinois, USA. E-learning courses give students full control over their own learning. Students are able to work at their own speed. E-learning is not only more effective for students but it is also better for the environment.

Prayogasala School

The STARS project is being implemented in six identified states viz. Himachal Pradesh, Maharashtra, and Odisha, Rajasthan, Madhya Pradesh and Kerala for strengthening teaching learning and results for states project was approved by the cabinet in October 2020, to be implemented as a centrally sponsored scheme. After signing of the loan agreement, the STARS project became effective on 23rd February 2021 for a period of 5 years i.e. up to 2024-25. The STARS programme is carved out of Samagra Shiksha, with a focus on those elements of the scheme that will most directly support school education enhancement. The STARS project includes a contingency emergency response component (CERC) under the national component which could enable it to be more responsive to any natural, man-made and health disasters. It will help the government respond to situations leading to loss of learning such as school infrastructure damage, inadequate facilities and use of technology for facilitating remote learning etc. Some of the measurable outcomes of the project are an increase in student achievement and minimum proficiency in grade 3 language in selected states.

Prayogasala School is an intervention for the development of learning outcome-based learner achievement. The Prayogasala is functioning under the monitoring and supervision of the 30 DIETs of Odisha. There are 30 Prayogasala schools have been developed with the help of the STARS project. The STAR school teachers are role models and advocates for students for learning enhancement. The modern era is an age of technology which is helping teachers and learners disseminate information in the classroom process. Today technology has increasingly become a vital element in the enhancement of quality in education. The use of ICT would help transform the process of teaching and learning from the traditional instructional teacher-centered endeavor to a learner-centric approach.

There is a provision to develop ICT-friendly classrooms in Prayogasala School for the purpose same ICT-related items have been supplied by state government under the STAR project. Such two interactive flat panels 65 inches, five computers, two routers, two wave cameras, 2 UPS, 2 vertical cabinets, 2 wireless keyboards, 2 mouse, 13 desktop, 2 client rods with monitors, 18 headphones, 20 UPS, 1 battery 26/6, computer table 20, broadband 1, with internet facility, tablets for students with headphones device carrying rack 1, digital content Class-II to VIII one set, now these ICT-based materials have been utilised in form of e-learning's strategies for development of learners' achievement of Class-III learners in foundational literacy.

Review of Related Literature

Webster and Hackley (1997) revealed that attitudes towards technology, teaching styles and control of technology are the three instructor characteristics that influence learning outcomes. Volery (2000) said that students are likely to experience more positive learning outcomes when their instructors hold a positive attitude toward the online delivery of course content. Ascoug, 2002 revealed teachers should understand the online education is not merely uploading teaching materials receiving and sending email messages and posting discussion topics into the internet. More importantly, it provides an arena for an interactive, deep, collaborative multidimensional thinking and learning environment.

Cottrell young, 2002, and Rooney 2003 revealed that the blended learning approach involves interactive print and electronic media to support self-learning, peer learning as well as learning that is facilitated by the tutor. M. Samira Bouel, Seoud, Islama T. Ftajeddin and Naglaes Diek (2014) conducted a study on e-learning and student motivation; a research study on the effect of e-learning on higher education and revealed that e-learning success in higher education depends on effectiveness of delivery and adequate training of instructors in the adoption of e-learning initiatives. It is revealed from the above reviews of related literature that there was a positive effect of e-learning-based interventions on learners' achievement in different subjects and in different categories of students. Hence, there is an urgent need to evaluate the e-learning strategy in relation to learner's achievement in the state of Odisha.

Rationale of the Study

Nowadays, a teacher cannot depend on any single method of teaching. The teacher has to try out several innovative methods. The primary objective of this research is to establish between e-learning strategies and learner achievement. The growing number of slow learners at all levels of our educational system warrants such a study. Further e-learning has a variety of inherent motivational features such as visual effects, hidden pro-up windows, linkage to other materials, etc. Even though there are adequate studies on e-learning in Western countries only a few studies have been undertaken in the Indian context.

Hence this study attempts to verify the efficiency of e-learning in teaching and learning of Odia language at the primary school level.

Statement of the Problem:

"A Study of Effectiveness of e-learning Strategy on Achievement of Early Grade Learners in Foundational Literacy"

Objectives

- To assess the implementation process of e-learning strategy during the classroom process in foundational literacy.
- To find out the effect of e-learning strategy on learner's achievements in foundational literacy.
- To find out whether there is any significant difference between pre-test and post-test mean scores of Prayogasala school learners in experimental groups.
- To find out whether there is any significant difference between the pre-test and post-test mean scores of non-Prayogasala school learners.

Hypothesis of Study

- There is no systematic implementation process of e-learning strategy in Prayogasala School.
- There exists no significant effect of e-learning strategy on learner's achievements in foundational literacy.
- There exists no significant difference between pre-test and post-test mean scores of Prayogasala school learners.
- There exists a significant difference between pre-test & post-test scores in the control group.

METHODOLOGY

An experimental double-group design was adopted for the studies.

Operational Definition of the Key Term

- Effectiveness: The degree to which something is successful in producing a desired result.



- E-learning: It is the process of sharing knowledge through various channels such as e-books, CDs, Webinars, computers and audio video tapes etc.
- Early grade learners: These grades including 1-3 are crucial for developing the foundations needed for success in schools and life.
- Foundational literacy: It refers to the skills and strategies involved in reading, speaking, writing, and interpreting his thoughts. It is conceptualized as a child's ability to read basic texts

Sample and Sampling Technique

The area of the study was Bhadrak district. Out of 7 blocks, one block was selected purposively. Only two upper primary schools were selected from the total schools of the block out of two sample schools one was Proyogasala School of DIET Bhadrak Agarapada and another is a nearby upper primary school. The Proyogasala school was an experimental group and the nearby school of DIET was a control group. Forty (40) Students were included from class iii of two schools for experimental groups and control group of the studies. The control group was taught through a traditional teaching process while the experimental group students learnt through e-learning strategies. The purposive sampling procedure was adopted for the study.

Implementation and Strategy

The strategy was implemented for two months in the Prayogosala School. The proposed e-learning strategy includes digital presentation, net browsing and the use of DVD and CDs to learn the selected unit of the foundational literacy. A structured programme of activities was prepared for the implementation of an e-learning based teaching-learning process in Class-III Odia Language.

Scoring Procedure

The achievement test consists of 20 objective-type questions these test items were selected on the basis of item analysis. The total score of the test was 20 for each correct answer, the score was one and for each wrong answer, the score was zero. The achievement test was administered before the implementation of e-learning and after completion of the e-learning strategy in form of pre-test and post-test.

Statistical Technique Used in the Study

The data thus obtained were then analyzed by using appropriate statistical techniques such as mean, standard deviation, and t-test. Wherever needed graphical representation was given for a better understanding of the result.

Analysis and Interpretation of the Data

Table 1 shows the status of the implementation of e-learning-based interventions in Proyogasala School. It is revealed from an analysis of the table that out of an intervention, Five use of the internet i.e. use of multimedia, e-content-based class, use of project tor in class, and use of interactive panel were used in the classroom process in a systematic manner and status was good. Similarly, out of total intervention, only three types such as computer-mediated class, audio-video presentation in class and development of a method for using ICT in class were to some extent manageable. Thus it was observed that e-learning-based intervention was implemented in a regular process for the development of competencies in context matter. Further, the graphical representation has been given in Figure 1.

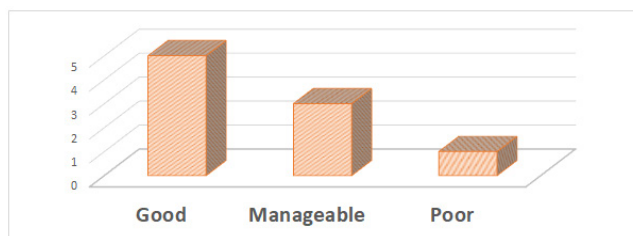


Figure 1: Graphical representation e-learning-based intervention

Table 1: Status of implementation of e-learning intervention in prayogasala school

Sl. No	Types of intervention e-learning	Good	manageable	poor
1	Computer –mediated class		√	
2	Use of multi-media	√		
3	Audio and video presentation		√	
4	e-content based class	√		
5	Use of internet	√		
6	Use of projector in class	√		
7	Use of interactive panel	√		
8	Development of method for use of ICT in class			√
9	Use of educational e-game		√	

Table 2: Pre-test and post-test scores analysis of control group learners in foundational literacy

Sl. No.	Name of the test	No. of Students	Means score	S.D	Calculated t-Value
1	Pre-test	20	7.1	1.13	15.155
2	Post-test	20	12.8	1.45	

Table 2 shows the analysis of the control group learner's achievement in foundational literacy. The post-test mean value is higher than the pre-test mean value as the control group learners were taught through the traditional lecture method but the difference between Pre-test and post-test Mean values could not make any significant difference.

Table 3 shows the analysis of Experimental group learner's achievement in foundational literacy. The achievement test shows that post-test score is higher than the pre-test score. Thus it is revealed that there is a positive effect of e-learning strategies on enhancing learners' achievement of foundational literacy. In comparison to the traditional method of teaching process. Thus there is a significant effect of e-learning strategies on the development of learner's achievement in the experimental group.

Table 4 depicts the post-test scores analysis of the control group and experimental group of learners in foundational literacy. The analysis of the above table clearly reveals that there is a significant difference between the post-test mean scores of the control group taught through the traditional lecture method and the experimental group who learned foundational literacy through the e-learning strategy. Further it is revealed that experimental group learners of Proyogasala school is higher than the achievement of control group learners. Moreover over critical analysis of mean values signifies

Table 3: Pre-test and post-test scores analysis of experimental group learners in foundational literacy

Sl. No.	Name of the test	No. of Students	Means score	S.D	Calculated t-Value
1	Pre-test	20	7.45	1.07	43.69
2	Post-test	20	19.1	1.5	

Table 4: Post-test score analysis of control group and experimental group of learners in foundational literacy

Sl. No.	Name of the Group	No. of Students	Means score	S.D	Calculated t-Value
1	Control group	20	12.8	1.45	12.5
2	Experimental group	20	19.1	1.5	

that experimental group learners significantly improved their achievement after the experiment. Thus it testifies to the advantage of e-learning strategy over the traditional lecture method.

Finding of Study

- Various e-learning strategies such as computer-mediated classes, use of multimedia audio-visual presented, use of e-content, internet, projector in the classroom, use of interactive penal, development of method for use of ICT in class, and use of educational e game were used systematically with direct supervision and monitoring of DIET faculty members
- The post-test mean value was higher than the pre-test mean value in the control group which the learners were taught through the traditional lecture method.
- There was a positive effect of the e-learning strategy on learners' achievements in foundational literacy in Projogasala School.
- The post-test score is higher than the pre-test score as a learner were learning through e-learning interventions in Projogasala School.
- There is a significant difference between pre-test and post-test scores of the experimental group in Projogasala School.
- The post-test score of Projogasala School is higher than the post-test score of the control group learners 60 e-learning approach is better than the traditional lecture method.
- Suggestive action-oriented strategies like teacher training as e-learning strategies, web-based learning, and technology-based learning should be given to all elementary teachers on a regular basis by the help of DIET for better classroom management and higher learner achievement at early grade stage.

CONCLUSION

The analysis of the study clearly stated the finding leads to the conclusion that the e-learning strategy is more effective than the traditional lecture method in teaching learning of Odia language to class-3 learners. Further, the strategy enables the Projogasala school learners to cope with the learning intervention so learning strategy should be introduced in other normal schools for better learner's achievement. Hence ICT based materials and training to teachers should be provided to the school for effective teaching-learning processes and for greater achievement

SUGGESTIONS

- E-learning strategy-based orientation pregame should be organized for all teachers by that they can effectively manage the classroom process.
- The new e-learning-based Pedagogical initiatives like Technology-based learning web based learning, and computer-based learning should be provided to the teachers in this regard.
- Necessary facilities for e-learning intervention should be provided to each school for the development of e learning environment.
- DIET of each district should play a measure role for the massive implementation o of e-learning strategy in schools by the help of in-service training program for teachers.

IMPLICATION OF THE STUDY

- This type of experimental study will certainly be helpful for teachers, researchers, and planners to take appropriate steps for introducing e-learning strategy during classroom transactions.
- DIET should take appropriate steps for organizing ICT-based orientation to all teachers of the Districts.
- The e-learning program can be telecast from one centre and all the students can get its benefits.
- The e-learning has a positive effect on enhancing the achievement level of all categories of students so it will help to decrease dropout and increase the attendance rate in elementary schools.

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