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Blended Learning's Effect on Academic Achievement

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Abstract

Blended learning is an innovative approach to incorporating technology into the course of instruction in the classroom. The application of this strategy in scientific classrooms in India has been limited to a small number of instances. It was the goal of the research team that was responsible for this study to investigate the potential impact that a blended learning method may have on classroom performance. This quantitative experimental inquiry was carried out with the participation of eighty undergraduate students from a variety of institutions located in Ranchi town. For example, forty students took part in the regular, in-person class, while the remaining forty students took part in a hybrid class that featured both online and in-person learning. An investigation of the impact of blended learning was made possible by analyzing the results of the achievement exam taken by the students. Following an in-depth analysis of the data, it became clear that the control group and the experimental group had attained dramatically different outcomes on the post-test of their accomplishments. When compared to students who were taught using more traditional methods, the findings showed that students whose sessions incorporated a blended learning component scored much better academically. The use of blended learning is now considered to be one of the most effective educational approaches. According to the findings of the study, blended learning had a favorable impact (both positively and negatively) on learner accomplishment and retention.

Keywords: Technology, Blended learning, Improvement, Environment and Effective

Introduction

It has been known for a long time that science and technology are important in order to maximise output and progress a number of industries that are largely dependent on human labour. For the purpose of formulating theories and principles, scientists need empirical data. The advancement of technology builds upon this foundation by improving the methods and processes that are already in place. The level of education that a nation's population has is a significant indication of the development of its economy. In order to keep up with the rapid advancements in science and technology, the education and training sector has been making concerted efforts to enhance support management, teaching methodologies, knowledge acquisition, assessment, scientific research, and the utilisation of information and communication technology (Diabat and Aljallad, 2020).

Blended learning is one of the innovative approaches that are becoming more prevalent in the field of education. The introduction of blended learning into this forward-thinking educational method has been the driving force for the stratospheric surge in popularity of this strategy. Over the last several months, there has been a significant amount of focus placed on research about the potential benefits of using blended learning practices in the classroom. According to the findings of this research, students improve their academic performance and level of engagement in the classroom when they employ a combination of conventional and online learning methodologies. Including a wide range of instructional approaches has been a fundamental component of educational thought for a very long time. Because of the many advantages that blended learning offers, there has been a significant increase in the number of educational institutions that make use of online resources. As a result of the rise of collaborative web-based courses, a multitude of new options for interaction between students and their instructors as well as between students and the materials themselves have evolved. The increased accessibility has resulted in a significant improvement to the overall quality of the educational experience. According to the majority of definitions, blended learning is a mix of traditional classroom education with online materials that are considered to be more traditional.

Blended Learning

In this century, a number of different industries have seen substantial shifts as a direct result of the proliferation of the Internet and the digitalization of India. Both the atmosphere of the

classroom and the way in which students learn have undergone significant transformations as a direct consequence of these advancements. It is beneficial for both teachers and students to participate in blended learning arrangements. It was not until after the year 2000 that the phrase "blended learning" was first used in written works. Blended learning has evolved from a conceptual framework into an essential component of traditional education as a result of the incorporation of digital resources, technological advancements, and concepts. Although there are a few other methods to characterise blended learning, the term "hybrid" is the one that is most often used. Learning that is flexible is often referred to as learning that is mixed-mode. An educational technique that makes use of a variety of different media is referred to as "blended learning" in shorthand. This place brings together the conventional classroom teaching techniques with the most cutting-edge online resources. Blended learning is a method of education that combines traditional classroom instruction with online learning in order to improve communication and collaboration among students, teachers, and the resources used in the course. Blended learning offers a lot of potential advantages, but if the learning model and design are not well thought out, those advantages can be offset by the numerous disadvantages that it possesses. There is a significant amount of concern on the problem of equitable access to online education in nations such as India, where a large number of people live in poverty. Keeping in mind that schools with more financial resources were the ones who used blended and hybrid learning approaches the most, which were the most effective, is a key point to bear in mind. The term "blended learning" refers to the process of educating pupils by blending traditional classroom time with online activities and resources. Because of its adjustability and the tailored attention it offers, students have the freedom to choose when, where, and how fast they learn. Blended learning was first conceived with the intention of integrating traditional classroom settings with online and computer-based instruction. The internet provides access to a broad variety of instructional resources, such as software, electronic books, interactive whiteboards, and many more. The popularity of blended learning is rapidly growing as an increasing number of institutions are adopting online courses.

Academic Achievement

Through the integration of scholarly pursuits and personal success, the notion of academic achievement is formed. The term "academic" is derived from the adjective "academy," which refers to a specific type of educational institution that offers specialised training. When a task is accomplished, it signifies that it has been finished or achieved. Thus, achieving success in

life is a reflection of one's expertise and knowledge in a specific subject or field, which is typically acquired through education. Gaining expertise and refining abilities in a specific field are the key components of achieving academic excellence. Evaluating academic performance often involves examining test scores. The subject of academic achievement has received significant attention and has been extensively researched by scholars for a considerable period. In order for students to succeed in their careers, it is crucial for them to perform exceptionally well academically. Students develop a strong sense of confidence and belief in their own capabilities when they consistently achieve success.

Literature Review

- In 2022, Kaul made a discovery regarding the assessment of blended learning effectiveness. The analysis was based on students' performance on an achievement exam. Blended learning, as a more modern approach to teaching, had a significant positive impact on students' test scores, surpassing the results of traditional teaching methods. From the results, it is clear that students are receptive to adopting innovative learning approaches. Given its proven efficacy in educational settings, the blended learning approach holds promise for implementation across a wide range of academic fields. This tool has proven to be highly effective in enhancing students' learning outcomes, facilitating seamless information sharing, fostering valuable network development, and enabling precise material selection. Teachers in mixed-ability classrooms take on a professional approach, prioritising the guidance of students rather than just delivering information. Therefore, by combining online and conventional learning approaches, teachers and students can achieve a more cohesive educational experience.
- In a recent study conducted by Tamang and Naraginti Reddy (2022), the authors examined the perspectives of postgraduate students at North-Eastern Hill University Shillong regarding integrated learning. For this specific study, a descriptive research approach was employed. The sample of the population included all graduate students in the Science Streams. In order to gain a more comprehensive understanding of students' perspectives on blended learning, a carefully prepared questionnaire consisting of eight parts was utilised. Not only did the students express a favourable view of blended learning, but they also actively advocated for its implementation at their school. Using a larger sample size and including a greater number of schools

could potentially enhance the reliability of the findings. The outcome of this study was solely influenced by the perceptions held by the pupils.

- ♣ Some academics see technology as a useful instrument for education and are eager to learn new abilities in this area, according to the research by Teras et al. (2022). Researchers found that 93% of teachers reported feeling stressed out as a result of student expectations after the virus was transmitted. According to this finding, students are experiencing more stress and anxiety due to the increased academic strain brought on by the introduction of remote education and distant teaching.
- ♣ Blended learning significantly improved students' athletic abilities, according to Wang et al. (2022). Consistent with other research, this study found that students' academic performance improved significantly when they participated in mixed learning environments. The benefits of integrated learning in terms of motor skills, satisfaction, learning interests, and attitudes towards learning have received more attention than those related to physical fitness, according to the study's findings.

Rationale for the Study

There is a considerable relationship between the pedagogical approach that is used in the classroom and the degree of achievement that the students achieve. Blended learning is an effective instructional method that combines traditional in-person instruction with online resources. A complete education is delivered to students via the use of blended learning, which is a method that combines the two. For educators to effectively apply blended learning methodologies into classroom instruction, they need to acquire a new mindset. This is a prerequisite for success. The investigators were of the opinion that it would be a good idea to explore the views that teachers of secondary school students have about blended learning and the ways in which it might improve students' grades. In the context of education, the phrase "blended learning" refers to a method of instruction that combines traditional classroom methods with the use of digital classroom resources. When it comes to constructing a diverse learning environment, educators are faced with the most difficult problem they have at their disposal. The use of blended learning provides teachers with the opportunity to swiftly evaluate the capabilities of their pupils and offer them with the required changes to the courses they are teaching. Blended learning is a strategy that makes studying easier for students since it allows them to access the knowledge whenever it is most convenient for them. This makes blended learning an interesting and effective method. This study was very

important in order to get a more in-depth understanding of the efficacy of blended learning in the context of higher education.

There are many other methods that learning may take place, such as via hybrid formats, online learning, and in-person learning. There is no question that blended learning is beneficial in the current environment. The researcher wanted to find out how blended learning influenced the grades of college students for the purpose of determining how it affected the pupils. Previous research has been unsuccessful in its attempt to discover a potential solution, and that is precisely what the current investigation is attempting to do. There are, without a doubt, a limited number of researches that concentrate on the fundamental factors that produce these issues. As an additional benefit, people would enhance their ability to continue learning without ceasing. The "New Traditional Way" of teaching is a method that blends the most beneficial aspects of conventional classroom learning with those of resource materials found on the internet. On the other hand, the participants' perceived level of enjoyment had a significant impact on the blended learning objectives they set for themselves. The use of mixed learning is a method that is more effective in acquiring knowledge. Further, when it comes to the research of blended learning, a significant number of academics have concentrated their attention on higher education rather than K-12 education. In the field of higher education, there is an immediate need for research on the implementation of blended learning.

Sample

A total of eighty students participated in the class, with forty attending in person and another forty utilising blended learning to enhance their traditional education. After receiving treatment, both groups completed the accomplishment test without any omissions. Interpreting achievement exam scores with expertise.

Objective

The aim of this research is to investigate the effect of blended learning on the academic performance of college students.

Hypothesis

Blended learning has a significant impact on college students' academic performance.

Research Design

The current research used a quantitative approach, using descriptive statistical methods to investigate the relative efficacy of blended learning and conventional learning techniques.

Tool

The researcher utilised a self-designed accomplishment exam in this investigation. Evaluations of academic performance were conducted before and after the test. The survey contained a total of 20 items. The assessment had a minimum credit value of 40. Both groups underwent a pre-test, which was subsequently followed by a post-test that was conducted simultaneously. The study was conducted over a period of four weeks. Both the experimental and control groups underwent a pre-test prior to the commencement of the treatment. Over a period of four weeks, the researchers administered the Traditional Learning Technique to the control group, while implementing the Blended Learning Technique on the experimental group. Individuals in the control and experimental groups received the post-test-I on the final day of treatment. Both groups were given a follow-up test after one month of treatment to assess the amount of information retained.

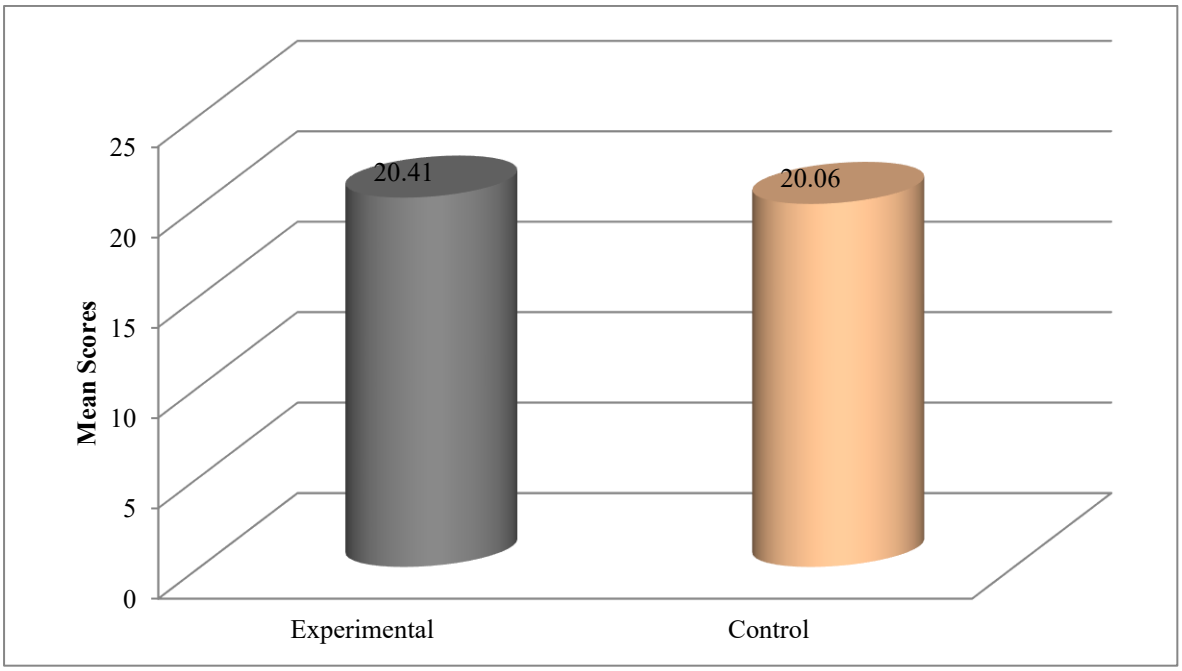
Data Analysis

The investigators employed a range of statistical techniques, such as calculating Mean Score values, Standard Deviations, and conducting t-tests, to carefully analyse and interpret the data. The results are displayed in the table below:

Table 1: **Pretest Academic Achievement of Experimental and Control Groups**

Group	**N**	**Mean**	**SD**	**t**	**df**	**Level of Significance**
Experimental	40	20.41	6.52	0.25	78	Non-Significant
Control	40	20.06	5.79			

Figure 1:**Mean scores of Pretest Academic Achievement of Experimental and Control Groups**

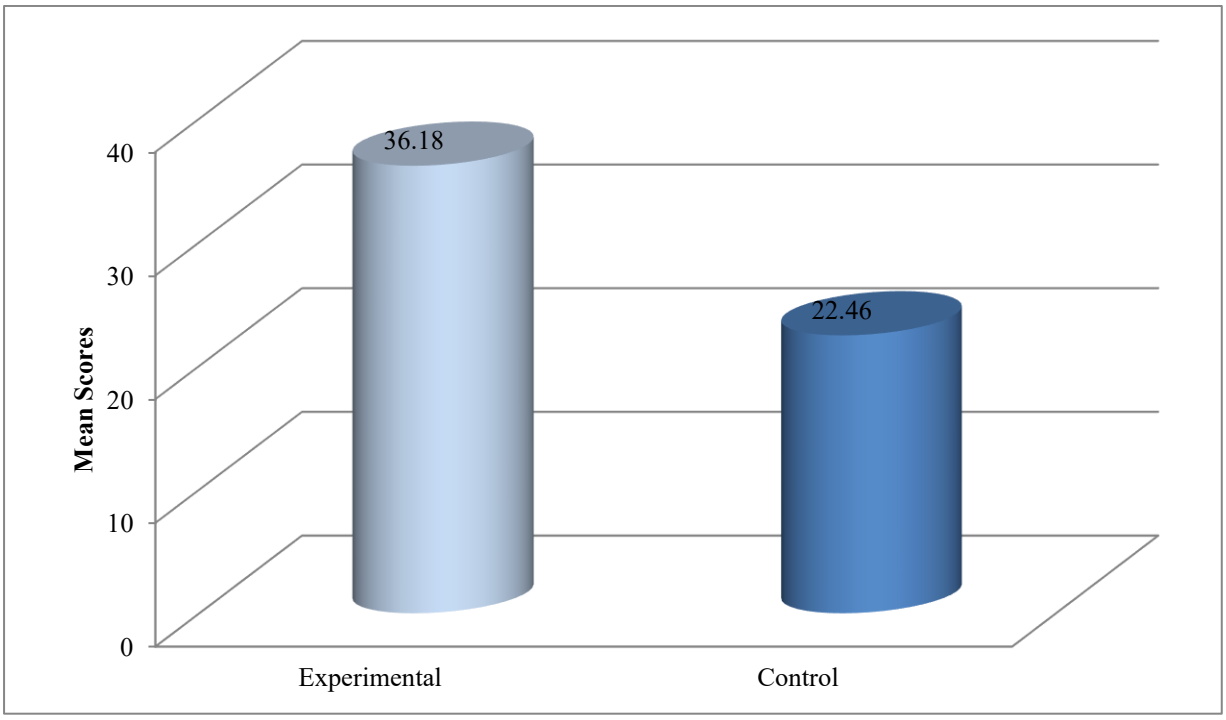


The t-test analysis reveals that the pre-test mean scores of both the experimental and control groups are 20.41 and 20.06, respectively, with standard deviations of 6.52 and 5.79.Based on the data provided in the table, it is evident that there was no significant difference observed at a significance level of 0.05 in the scores between the experimental group and control group. It is clear from the calculated t-value (0.25) when compared to the critical t-value. According to the findings, there was no significant difference in academic performance between the students in the experimental group and the control group.

Table 2: **Post test Academic Achievement of Experimental and Control Groups**

Group	N	Mean	SD	t	df	Level of Significance
Experimental	40	36.18	8.02	8.25	78	Significant at 0.01
Control	40	22.46	6.79			

Figure 2 : **Mean scores of Posttest Academic Achievement of Experimental and Control Groups**



There is clear evidence of a difference in the average scores of the experimental and control groups on the post achievement test. Compared to the experimental group's mean score of 36.18, the control group achieved a significantly higher mean score of 22.46. A t-value was calculated on the posttest scores to assess the significance of the differences resulting from the method of instruction. This calculation was performed to evaluate the influence of the study variable, teaching methods. The observed effect on the achievement posttest was determined to be statistically significant ($t > 0.01$). The observed effect can be credited to the instructional methods utilised, particularly those employed with the students in the experimental group. This research is supported by Makkar & Sharma (2022).

Conclusion

When it comes to student performance and retention, blended learning performs substantially better than conventional methods of education, as shown by the findings and analysis of the research that were presented in the part that came before this one. As a consequence of the findings of the research, which give substantial evidence that blended learning strategies have the potential to increase students' academic performance and retention rates, college instructors should seriously consider using these strategies. The results of this research make it abundantly evident that the use of a blended learning approach with college students results in much superior outcomes when compared to other methods of education that are more traditional. This method is significant because it enhances student performance by integrating

conventional learning tactics with online learning strategies. This is the reason for its relevance. By using a blended learning method, classrooms may be transformed into places that are much more engaging and dynamic for both students and instructors, offering them the opportunity to learn and develop. The use of a blended learning method, in which both the instructor and the student are involved, results in the creation of a learning environment that is more both exciting and pleasurable. Research has shown that when instructors use blended learning methodologies, there is an increase in the level of accomplishment that students attain in the classroom. Both the student and the instructor have a greater level of investment in the process of learning, and the students have the perception that they have a more significant part to play in this approach. The use of a blended learning strategy has the potential to save time for both teachers and students.

It is also highlighted by the findings of the research that there is a need for a robust technological framework that can assist educators in the process of developing native blended learning resources. High-tech information and communication technology devices and dependable internet connectivity are both included in this category. Support from management is essential to the success of higher education institutions when it comes to the development of online resources and capabilities at the college and university levels.

Implication

For the purpose of enhancing the academic accomplishments of pupils, it is advised that teachers use blended learning approaches into their teaching practices. Increasing the level of familiarity that students have with blended learning is a big opportunity. It is a tool that helps to support the development of adaptability within the field of education. Students get greater agency via blended learning because it gives them more control over their learning environment, gives them access to course materials from a variety of sources, and gives them the ability to study at their own pace and in the way that they find most comfortable. Students who are already comfortable with the educational environment feel more at ease in both traditional classroom settings and online learning platforms as they continue to get more familiar with the environment.

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