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Effectiveness of Smart Classroom over Traditional Classroom in Terms of Academic Achievement of Students Using Statistical Method

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ABSTRACT : Today technology is an inherent part of our lives. All the organizations have identified the importance of Information and Communication Technology (ICT). ICT plays an important role in improvement of educational sector. ICT helps us in getting information from all over the world. Thus the student needs to be trained in ICT and its use. This paper focuses on finding the effectiveness of smart classroom over traditional classroom in terms of academic performance of students. To carry out the study two groups of students were administered. We considered 20 students in each group. Group 'A' was taught through traditional method and group 'B' through smart board.

KEYWORDS : ICT, Traditional classroom, Smart classroom, academic performance.

I. INTRODUCTION

Technology has become a way of life. It is successfully utilized in resolving many of our problems. Quality education is an essential requisite in today's competitive environment. Technology benefitted us in every aspect of our life right from communication to education. However effective use of technology to enhance the quality of teaching is a very challenging problem. Over the years technology has been used to improve the quality of instruction. In ancient days students were taught in a gurukul where they were taught by the gurus. With the passage of time and progress in life, this system was replaced by modernized culture i.e. classroom based teaching – learning came into existence. New methods of teaching have been introduced and today we witness one of the most versatile gift of science, known as “Smart classroom”.

The Smart Classroom software has revolutionized and brought a complete transformation in the traditional rote methods of learning. The system understands the student's requirement and provides innovative learning solutions using digital instruction material, through the use of projectors, whiteboards, and computers making the learning process student-centric. Smart class is a digital initiative, which is rapidly changing the approach and methodology that teachers use.

II. LITERATURE REVIEW

Traditional Education:

The chief business of traditional education is to transmit to a next generation those skills, facts, and standards of moral and social conduct that adults consider to be necessary for the next generation's material and social success. The students are expected to receive and believe fixed answers. Teachers are the instruments by which this knowledge is communicated and these standards of behaviour are enforced.

Traditional teaching is concerned with the teacher being the controller of the learning environment. Power and responsibility are held by the teacher and they play the role of instructor in the form of lecturers and decision makers in regards to curriculum content and specific outcomes. In short, in traditional teaching it is the teacher that causes learning to occur.

Learning is chiefly associated within the classroom and is often competitive. The lesson's content and delivery are considered to be most important and students master knowledge through practice.



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III.CHARACTERISTICS

A. Traditional Education :

- It is completely effective.
- The cost of education is not prohibitive.
- Simple and easiest way of providing knowledge as it does not have any technical constraints.
- Maintenance of traditional classrooms is easy.

B. ICT based teaching-learning:

Technology plays a big role in developing following characteristics for smart classrooms:

- **Student-centric:** In Smart classrooms, teachers play the role of facilitators. They help students think critically. Students discover and master new concepts. Student-centric classroom environments put students' interests first and are focused on each student's needs, abilities and learning styles.
- **Computing devices:** Computers are readily available in modern classrooms, since they are essential tools for 21st century students and replace the utilities of pen and paper. They give teachers the opportunity to enhance their lessons and assist them.
- **Adaptive learning:** Any classroom will always have students of different types of learning abilities in it which often makes it difficult for teachers to make sure that all of them understand the concepts. The modern approach of adaptive learning gives students the freedom to learn at their own pace and in the way they are most comfortable with.
- **Students understand and follow the rules and procedures:** The learning environment is carefully planned and well-organized. Class rules, procedures, and notices of upcoming activities are posted in convenient places to help students stay on track. Students are constantly encouraged to remind them of their goals and responsibilities. They follow class routines and understand what they are expected to achieve each day and how they are to go about it.
- **Mutual respect:** Teachers and students should always have respect for each other. As now the role of teachers is no longer to be the sage on the stage, students should not forget their value as they will always receive guidance from them. Also, teachers should encourage students to speak with confidence and value their opinions.
- **Students take responsibility of their learning:** As students are encouraged to actively participate in their own learning, they become responsible for their learning.
- **Performance-based assessments:** Regular performance-based assessments are carried out by teachers through various methods which are not restricted to tests. These can be by conducting quizzes and polls.
- **Collaborative learning:** Learning through collaboration is one of the most effective forms of learning. Teaching and learning in isolation are very restrictive and hinder progress. Learning in groups enhances the scope of learning and develops critical thinking. Collaborative learning activities include collaborative writing, group projects, joint problem solving, debates and more. Collaborative learning redefines traditional student-teacher relationship in the classroom.

IV. ADVANTAGES OF SMART CLASS ROOM

- **Provides Flexibility:** Interactive whiteboards allow many different forms of media – including photos, illustrations, maps, graphs, games, and video, to be displayed. These tools help to expand the nature of content that can be used in learning. In addition, SMART Board makes learning to be more dynamic as the different forms of presenting information are readily available.
- **Enhanced teaching/learning experience:** SMART Boards provide new ways for teachers to teach, and for student to learn. These tools support a wide variety of learning styles. For instance, visual learners can watch as their tutors use the whiteboards to project visual elements, whereas audio learners can listen and have discussions. On the other hand, the Boards come with touch screen capabilities that allow tactile learners to touch and interact with the board.



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- **Interact and share:** The interactive nature of SMART boards offers learners an opportunity to share and participate in the instructional process. Interactivity provides a platform for students to demonstrate their grasp of the subject through touching, drawing, and writing. Every learner has an opportunity to participate or contribute to the presentation and/or discussion. In addition, the boards provide for rapid assessment whereby learners can receive immediate feedback. Teachers and students are able to identify individual strengths and weaknesses in various subject areas and isolate areas/topics that need more focus or review. Thus smart board helps to increase the involvement of the students in learning.
- **Low-Maintenance:** Smart Boards are neat and easy to use. There are no hassles cleaning or maintaining whiteboards. The data on the screen can be modified using a specialized highlighting tool or pen. There is no need for using unhygienic chalk or marker pens.
- **Access to online information & tools:** Smart boards allow learners to easily access a rich database of online resources. Teachers can use the wide variety of online information sources such as knowledge databases, online video and news items to reinforce their lessons. Learners can also quickly access the wide range of powerful tools and resources to conduct.
- **Going Green:** Interactive boards are also environmentally friendly. They offer teachers an entirely different way of presenting information to students, which eliminates the need for writing, printing or photocopying. Which, contribute to eliminate wastage from over-utilization of paper and ink.
- **Technology Integration:** Smart boards allows for integration of various technologies in order to improve the learning experience. For instance, it is possible to attach tools such as microscopes, document cameras, cameras or video cameras to a whiteboard to aid in instruction. It is also possible to integrate the interactive learning tools with a wide range of software applications.
- **Communication:** Interactive whiteboards allow for connectivity in different locations; making ideal collaboration and distance learning environments. When using Smart boards, student show to increase student-to-student collaboration and increase overall participation in the lesson.

Overall, incorporating Smart Boards to the classroom environment is likely to change the way teachers impart knowledge to students and at the same time simplify the learning process for students. Students will find it easy to engage with lessons and gain a better understanding of the overall subject concept. It is an ideal tool for any classroom setting. The education field needs technology like this for students, learners, and educators to continue to grow in their field.

V. WHAT IS ACHIEVEMENT?

According to Goods(1973)“academic achievement as a knowledge attain or skill develop in school subject usually designate by test score or by mark assign by teachers or by both”. According to Hawes (1982) “achievement is successful accomplishment or performance in particular subject areas or courses usually be reasons of skilled hard work and interest typically summarized in various types of grades, marks score on descriptive commentary.”

VI. COLLECTION OF DATA

To collect data for the tests 40 students from T. Y. B. Sc.(Computer Science) of Dr D. Y. Patil ACS College were considered. Two groups of 20 students in each group were formed. Group-‘A’ students were taught through traditional method in classroom whereas Group-‘B’ students were taught through smart board in smart classroom.

VII. METHOD FOR THE STUDY

To test the subject ability and academic achievement of students’ two tests were conducted. Firstly a **-pre-test** was conducted where-in the subject knowledge of all the students i;e Group-‘A’ and Group-‘B’ were tested without any



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instructions. Secondly-a **post- test** was conducted for the same subject with the same number of questions but, the instructions were provided to the Group 'A' students through traditional board and to Group 'B' students through Smart board.

VIII. ANALYSIS AND INTERPRETATION

Table 1. Statistical Analysis of Means of Pre test Scores of Academic Achievement in Computer graphics for Students in Group-A and Group-B

Groups	Mean	Variance	t- value
Group - A	16.7	6.75	1.105
Group - B	19.3	3.13	

From the table 1, it is observed that on an average, the performance of Group-'A' and Group-'B' on pre- test was almost the same and the difference between mean scores of students on pre-test was not significant, the value is smaller than the tabulated value at 0.01 and 0.05 level of significance and therefore observed difference in mean scores of pre-test is not significant.

Table 2. Statistical Analysis of Means of Post test Scores of Academic Achievement in subject of Computer graphics for Students in Group-A and Group-B

Groups	Mean	Variance	t- value
Group - A	25.2	3.84	2.15
Group - B	29.6	2.25	

From the table 2, it is observed that the t-value, mean value of Post-test scores of Group-'A' and Group-'B' is calculated to be 2.15 which is greater than tabulated value at 0.05 level of significance i.e. 2.10 and can be significant at 0.05 levels. The value depicts the observed difference in mean scores of post-test for control and experimental group is significant.

IX. CONCLUSIONS

1. There is no significant difference between the academic achievements of T. Y. B. Sc.(Computer Science) students when no instructions to both groups are provided.
2. There is significant difference found between both 'Group-A' and 'Group-B' students in terms of academic achievement when instructions to group-A students were provided in a traditional way and instructions to group-B students was provided through smart board.
3. Though smart classroom teaching is efficient in imparting knowledge to students we cannot say that it is the best method of teaching.
4. There can be limitations on the implementation and maintenance of Smart classrooms.
5. India is still in a developing stage and hence it will take some time for smart technology to reach in each and every part of the country.

This study may provide help to teachers, counselors and guides to develop suitable methods of teaching using smart technology tools for college students. Hence we can say suitable use of smart class room technology in providing instructions to students helps in improving academic achievement which in turn enhances the overall performance of the students



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