

## **The Impact of Technology Integration in the Classroom on Students' Learning Outcomes**

**Sagarika Jena**

Lecturer in Education, Maharshi College of natural law, BBSR

**Abstract:** The purpose of this study was to determine how technology integration affects student learning. Classrooms are getting more and more technology, and the rapidly evolving nature of technology demands that it be integrated into the curriculum. Technology has the potential to improve student learning, but it can also have a negative impact on learning. While technology makes learning more convenient and enhances many learning opportunities, it can also be an overused tool that can have a negative impact on students' ability to develop their fine motor skills and problem-solving skills. While integrating technology into the classroom has proven beneficial, it also has several disadvantages. Technology has helped student willingness and engagement and allows for the enhancements of learning. Reducing the obstacles that keep many children and schools from achieving greatness is something that teachers and students should take advantage of. Therefore, it is past time for every nation to put in place a future education system that is more technologically sophisticated.

**Keywords:** Technology, Classrooms, Teaching, Learning, Efficiency, Academic Performance.

### **Introduction:**

The younger generation is growing up with technology always available to them. Children are curious in the ever-expanding world of social media applications and online platforms. Furthermore, gaming consoles, computers, tablets, gaming phones, free Wi-Fi, and electronic toys are all quite popular in today's society. Students are growing up with a competitive tendency in technology. According to Klopfer, et al. (2009), "Every day, many students are spending countless hours immersed in popular technologies—such as Face-book, My Space, World of Warcraft, or Sim City" (p. 1). Technology is starting to play a bigger role in education than it does now. Teachers try hard to integrate technology into their regular lessons because it is an ever-evolving field that helps them instill a love of learning in their students.

In an era characterized by rapid technological advancements, the integration of technology into education has emerged as a transformative force, reshaping traditional teaching and learning paradigms. The seamless incorporation of technology within the curriculum has sparked intense debates and discussions within the educational community. This research paper delves into a crucial aspect of this ongoing discourse by investigating the effects of a technology-integrated curriculum on student engagement and outcomes.

Raising student accomplishment while using technology as a tool is a prevalent concern these days. Legislators and educators are reaffirming their support for initiatives and methods of teaching that maximize benefits to learning and student results. Given how commonplace technology is in our everyday lives, it is imperative that we integrate it into teaching and learning if we are to have a lasting impact on students' learning.

The Common Core Standards' introduction and focus on technology means that using technology in the classroom will now take precedence.

**Statement of the Problem:** Technology has the ability to impact student learning in a positive manner. “It has displayed an increase in meaningful communication, critical thinking, creativity, and collaboration. There is evidence of an increase in student interest and engagement in the secondary classroom with technology paving fun educational paths by the ways technology can be integrated”.(Mollov, M. 2019 & Makhoulf, K., & Bensaf, Z. 2021 ) “This was further emphasized through a brief review of the impact of technology and its integration at the college level. Students are reacting positively to a tool that allows them to enhance their independence.

On the other hand, research has also shown that technology has the ability to negatively affect student learning in the classroom. Though motivation may improve, the data available noted that many of the classrooms observed did not improve in regards to scores and other measures of success in the classroom. Though creativity and collaboration have been evident in technology integrated classrooms, there is a lack of learning the core material itself. Furthermore, the way technology is integrated is not always sustainable for developing adolescent minds”.(Sims, C. 2017 & Williams, R. 2021) One drawback of technology is that it may be distracting, which makes it harder for students to concentrate and stay focused.

**Objectives:** The present study has been carried out to find out the impact of technology integration in the classroom on the students learning. It also has made an attempt to find out the difference of impact of technology integration in classroom in respect of the dimensions of learning out comes.

### **Hypothesis:**

H01-Technology integration in the classroom can significantly impact the learning out comes of the students.

H02-There will be no significant impact of technology integration in classroom among on the academic achievement of the students

H03-There will be no significant impact of technology integration in classroom among on the critical thinking of the students

**Method:** To fulfill the set objectives of the study the researcher has followed the descriptive survey research method.

**Population and Sample:** Population for the present study comprises of the students of 9<sup>th</sup> standard studying the schools of Paschim Medinipur district of West Bengal. Out of the existing population the researcher has selected 60 students for the current study by following the purposive sampling method.

**Tools:** For collecting required data the researcher has used structured questionnaires - Academic Achievement Test” with 15 items, and the second data collection tool is “Critical and Creative Thinking Test” with 17 items of four alternatives against each statement.

**Data Collection:** Data were collected in two sections- Before technology integration in classroom and after technology integration in classroom. Students were given the set questionnaires and asked them to give their answers. The response of the students were recorded and after that those response were tabulated in the SPSS version 20.

**Techniques:** Collected data were analyzed in the SPSS software by applying the mean, SD and t test.

### **Data Analysis and Interpretation:**

**Table 1-Descriptive Statistics of learning out comes before Technology Integration**

Academic Achievement		Critical Thinking	
Parameters	Values	Parameters	Values
N	60	N	60
Minimum	2	Minimum	3
Maximum	12	Maximum	15

<b>Mean</b>	7.51	<b>Mean</b>	8.1
<b>Median</b>	8	<b>Median</b>	8
<b>SD</b>	2.60	<b>SD</b>	2.91
<b>SEM</b>	0.33	<b>SEM</b>	0.37
<b>Skewness</b>	-0.14	<b>Skewness</b>	0.19
<b>Kurtosis</b>	2.42	<b>Kurtosis</b>	2.68

The above table shows the descriptive statistics of the students learning out comes on the two dimensions- Academic Achievement and Critical Thinking before the technology integration. From the table above it is seen that the mean value for the academic achievement is 7.51 with the minimum of 2 and maximum of 12. The obtained SD is 2.60. Similarly the mean value for the critical thinking is 8.1 with the minimum of 3 and maximum of 15. The obtained SD is 2.91

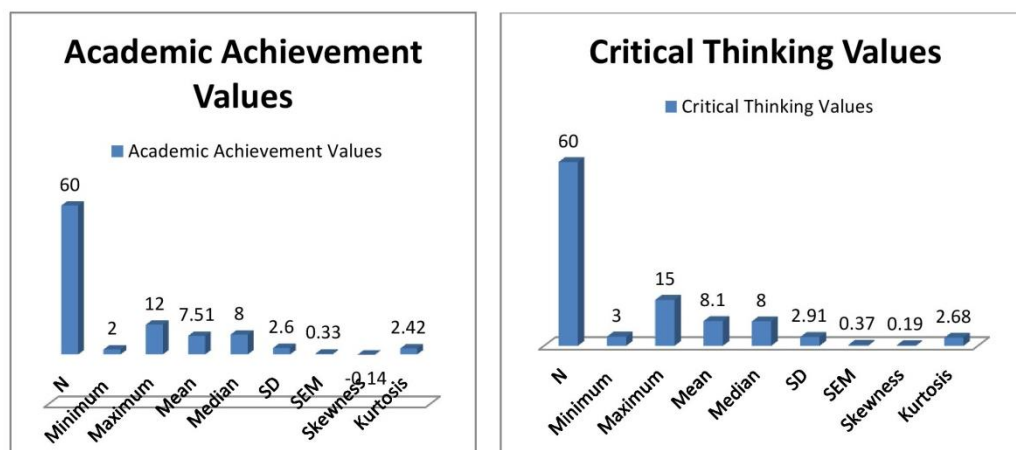


Fig. Showing descriptive statistics of the two dimensional learning out comes before technology integration in classroom.

**Table 2-Descriptive Statistics of Learning Outcomes after technology integration.**

<b>Academic Achievement</b>		<b>Critical Thinking</b>	
<b>Parameters</b>	<b>Values</b>	<b>Parameters</b>	<b>Values</b>
<b>N</b>	60	<b>N</b>	60
<b>Minimum</b>	5	<b>Minimum</b>	6
<b>Maximum</b>	15	<b>Maximum</b>	17
<b>Mean</b>	10.36	<b>Mean</b>	10.83
<b>Median</b>	10	<b>Median</b>	10.5
<b>SD</b>	2.37	<b>SD</b>	2.71
<b>SEM</b>	0.30	<b>SEM</b>	0.35
<b>Skewness</b>	-0.16	<b>Skewness</b>	0.34
<b>Kurtosis</b>	2.50	<b>Kurtosis</b>	2.67

The above table shows the descriptive statistics of the students learning out comes on the two dimensions- Academic Achievement and Critical Thinking after the technology integration. From the table above it is seen that the mean value for the academic achievement is 10.36 with the minimum of 5 and maximum of 15. The obtained SD is 2.37. Similarly the mean value for the critical thinking is 10.83 with the minimum of 6 and maximum of 17. The obtained SD is 2.71.

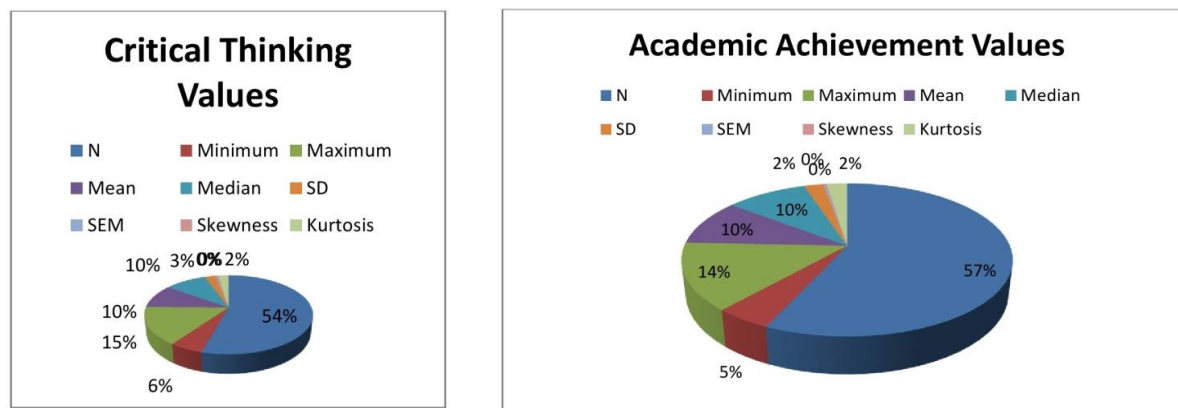


Fig. showing the descriptive statistics of two dimensional learning out comes after technology integration.

**Table 3-Difference in the Learning Out comes**

Group	Mean	SD	SEM	t
Pre-Test Academic Achievement	7.51	2.60	0.33	6.27
Post-Test Academic Achievement	10.36	2.37	0.30	
Pre Test Critical Thinking	8.1	2.91	0.37	5.31
Post Test Critical Thinking	10.83	2.71	0.34	

To find out the difference of learning out comes among students before technology integratin and after technology integration t test has been applied. From the above table we can see that the mean vale for the dimension of academic achievement before teachnology integration was 7.51 and SD is 2.60. But after the technology integration the mean score of the academic achievement of the students is 10.36 and SD is 2.37. The table shows that the obtained t value is 6.27 which is much higher than the critical value at 0.05 level of significance and by conventional criteria, this difference is considered to be extremely statistically significant. Therefore the formulated null hypothesis “ There will be no significant impact of technology integration in classroom among on the academic achievement of the students” is rejected. Hence it is proved that the technology integration has significant impact on the academic achievement of the students.

We can also see that the mean value for the dimension of Critical Thinking before teachnology integration was 8.1 and SD is 2.91. But after the technology integration the mean score of the critical thinking of the students is 10.83 and SD is 2.71. The table shows that the obtained t value is 5.31 which is much higher than the critical value at 0.05 level of significance and by conventional criteria, this difference is considered to be extremely statistically significant. Therefore the formulated null hypothesis “There will be no significant impact of technology integration in classroom among on the critical thinking of the students” is rejected. Hence it is proved that the technology integration has significant impact on the critical thinking of the students.

### Findings:

1. Technology integration has significant impact on the learning out comes of the students.
2. The technology integration has significant impact on the academic achievement of the students
3. The technology integration has significant impact on the critical thinking of the students

**Recommendations:** With the increasing integration of technology into both the educational system and the business, it is crucial for students to get acquainted with a range of digital applications. Students are better prepared for life beyond high school when they have opportunities to develop as learners and succeed academically via the integration of technology into the curriculum. Although educational technology makes the learning environment more student-centered than teacher-centered, it is crucial that instructors carefully consider the best ways to utilize it. With hundreds of different technology apps available, each with unique capabilities, it is crucial that instructors assist kids in learning about these technologies so they don't get overwhelmed. It's advised that educators provide their pupils ongoing feedback on their technology-related experiences.

**Conclusion:** The use of digital tools and resources not only accommodates students' varied learning methods but also fosters their critical thinking, creativity, and curiosity. Thus, technological integration fosters teamwork and active engagement, resulting in a more vibrant and stimulating learning environment. Moreover, the review study synthesizes empirical data that indicates a favourable link between curricula that include technology and enhanced academic achievements. It has been shown that integrating technology into the classroom improves student performance overall, information retention, and accomplishment.

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