Journal of Media Horizons
ISSN: 2710-4060 2710-4052 Volume 7, Issue 2, 2026

IMPACT OF EDUCATIONAL TECHNOLOGY ON STUDENT'S ENGAGEMENT AND MOTIVATION, AT SECONDARY LEVEL

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DOI: https://doi.org/10.5281/zenodo.18844609

Keywords
Students, Technology, Engagement, Assessment, Higher Learning, Social and Emotional Health, Differentiated Instruction, Tablets, Self Regulation.

Article History
Received: 29 December 2025
Accepted: 14 February 2026
Published: 28 February 2026

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Abstract
The objective of this study is to observe the influences of educational technology in increasing secondary school student's engagement in learning as well as student motivation. The methods were carried out by a mixed method approach consisting of quantitative surveys and qualitative investigation in the form of interviews that together provided comprehensive analysis. The use of interactive whiteboards (IWBs), tablets, and online learning platforms for engagement and motivation was measured through Likert-scale items for 200 students and 20 teachers through a survey. Qualitative insights were then gathered through in depth interviews with teachers to complement the quantitative data. The conclusion is that the use of educational technology had a great impact on raising students' engagement and motivation
levels, with the greatest impact registered in interactive whiteboards and online platforms. While opportunities to integrate technology like cloud technology, which demands teacher guidance and may prove distracting for a student, were also outlined.

1 INTRODUCTION

For a few years now, the integration of educational technology in classrooms has been heralded as a way to improve the learning experiences of students. Interactive whiteboards (IWBs), tablets and online learning platforms can potentially enhance three areas of student involvement, participation, engagement, motivation and teacher acceptance. Academic success is often predicated on engagement, where attention, participation and interaction are indicators of engagement, and motivation is the engine behind student's willingness to learn and
motivation through challenges. While technology in education is still being adopted widely, until now, the effect is still in the realm of ongoing research. This study attempts to examine how educational technology affects students engagement and motivation particularly in secondary school education.

1.1 Problem Statement.

While educational technology has been widely adopted, its actual impact on students' engagement and motivation is not uniformly understood. This study seeks to identify how different types of educational technology affect student engagement and motivation in the classroom.

1.1 Objectives of the Study.

1. To assess the impact of educational technology on students' engagement in the classroom.
2. To evaluate the effect of educational technology on students' motivation to learn.
3. To identify which types of educational technology are most effective in enhancing engagement and motivation.

2 Literature Review

Educational technology has been shown to create a more engaging and motivating learning environment by previous studies. Research by (Smith ,2019) has shown that interactive tools, such as IWBs, increase student participation, and in the hands of a digital platform, students have the ability to work at their own pace (Johnson, 2021). Unfortunately, the efficacy of these technologies rests on numerous factors, such as the teachers' comfort with the technology, and the learners' familiarity with it as well as other pedagogical approaches used (Tay, 2020). However, challenges like the digital divide. Distractions and even technical issues are also present in many educational spaces (Brown & Lee, 2018). To remedy these gaps this study provides both quantitative and qualitative insights into the use of technology in secondary schools.

3 Methodology

The impact of educational technology on student engagement and motivation was researched using a mixed methods research design. The study involved two data collection methods: quantitative survey and qualitative teacher interview.

3.1 Participants

200 secondary school students and 20 teachers were surveyed. Students were chosen from around multiple classrooms that have utilized some form of ED technology, like IWB, tablets and online learning tools. They chose teachers with experience with integrating technology into their teaching practices.

3.2 Data Collection

Structured Questionnaire including 10 Likert-scale items about student's engagement, motivation and attitude toward educational technology was used to collect quantitative data. These items concerned things like interaction with technology, the willingness to study with technology, and preferences for technological methods of instruction.

Moreover, 20 teachers were interviewed throughout in depth interviews that each lasted on average 30 minutes. The interviews probed how teachers had experiences with educational technology as well as their perceptions of how educating technology impacted student motivation and engagement.

4 Data Analysis

The relationships between technology use and student engagement and motivation were examined through inferential statistics (ANOVA, t-tests and regression analysis), and through descriptive statistics (mean scores and standard deviations) on quantitative data. Thematic analysis was then used with qualitative data drawn from the interviews to extract themes that related to the use of technology in the classroom.

5 Results

5.1 Quantitative Results

However, the survey results of the students generally demonstrate positive experiences with the use of educational technology. All survey items had mean scores above 4.0 suggesting that the use of technologies, e.g. IWB, tablet and online learning platforms, led to greater engagement and motivation in students.

Table 1; Summarizes the mean scores (M) and standard deviations (SD) for the 10 survey items:

	Survey Item	Mean (M)	Standard Deviation (SD)
1.	I feel engaged when using educational technology.	4.3	0.7
2.	Educational technology helps me understand concepts better.	4.5	0.6
3.	I am motivated to complete assignments using technology.	4.2	0.8
4.	I prefer learning through technology rather than traditional methods.	4.4	0.7
5.	Technology makes learning more enjoyable.	4.6	0.5
6.	I actively participate in class when technology is used.	4.1	0.9
7.	I feel more confident in my learning when using technology.	4.2	0.6
8.	I believe educational technology increases my motivation to learn.	4.5	0.5
9.	I seek out additional resources online to enhance my learning.	4.3	0.8
10.	My teachers effectively use technology in the classroom.	4.0	0.9

5.2 Inferential Analysis

Differences in engagement and motivation between different types of technology such as IWBs, tablets and online platforms were statistically tested (t-tests, ANOVA). Use of IWB or online platform had a significantly higher positive impact on student engagement and motivation than tablets. Further regression analysis showed that there was strong relationship ($r = 0.75$) between technology usage and student motivation, which was a positive correlation between the amount of technology usage and increased motivation levels.

5.3 Qualitative Results

Thematic analysis of the teacher interviews revealed four main themes.

5.3.1 Greater Engagement:

IWBs and online platforms enabled students to participate more in, and pay more attention to lessons as teachers reported consistently. The high engagement scores observed in the quantitative data had been in line with this.

5.3.2 Individual Learning Pace:

Teachers observed that when students are given tablets they can learn at their own pace, giving them a sense of autonomy, in addition to responsibility in their learning.

5.3.3 Need for Guidance:

Several teachers also felt the need for proper training and support with the use of technology, and its use in their lessons. Teacher involved in controlling use so as not to distract from the subject.

5.3.4 Positive Attitudes Toward Technology:

Most teachers reported enthusiasm for the possibility of improving teaching and learning, specifically with respect to augmenting student motivation, with technology.

5.4 Discussion

The results of the study show that educational technology helps enhance student engagement and motivation. From the quantitative data, I find that students are more engaged when using IWBs, tablets or other online platforms and among these, IWBs and other online platforms result in the most substantial differences in engagement. Previous research has also demonstrated exhibitions to benefit interactive and flexible forms of learning (Johnson, 2021; Smith . 2019), and these results similarly favour the adoption of these tools to increase student engagement.

In addition to the qualitative data, especially the teacher interviews, offer further understandings about how technology affects engagement and motivation. Teachers pointed out how autonomy in learning must be highlighted, and with the usage of tablets, but technology can divert students' attention if not well managed. Consistent with previous studies that highlighted the challenges faced in the use of educational technology in schools, there is a need for teacher guiding in using educational technology for learning (Brown & Lee, 2018).

6 Conclusion

This work shows that student engagement and motivation are positively influenced by educational technology including IWBs as well as online learning platforms. By integrating these technologies into secondary education, student participation, interest and task persistence are increased. In addition, although using technology effectively may enable students to use technology without being distracted, they will need teacher guidance and support to achieve that.

More work is needed to assess the long term impact of educational technology on student learning outcomes and on the extent to which teacher professional development facilitates maximum benefit from these technologies.

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