

## THE IMPACT OF INFORMATION TECHNOLOGY ON MIDDLE SCHOOL STUDENT ENGAGEMENT

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### ABSTRACT

The purpose of this research is to look into how middle school students' engagement is affected by information technology. The study will investigate how students' motivation, participation, and engagement levels are impacted by the use of technology in the classroom. This article will investigate the relationship between information technology and student involvement in middle school settings by doing a thorough literature review. Information technology has a variety of effects on middle school pupils' engagement. Research has demonstrated that integrating technology, especially in STEM education, can boost students' enthusiasm and interest in these subjects (Mohr-Schroeder et al., 2014). Furthermore, Yang et al.'s research from 2021 emphasizes the importance of supportive connections in raising student engagement by highlighting the favorable correlation between teacher support, emotional engagement, and academic success. Liu et al. (2023) discovered a favorable association among computer self-efficacy, learning engagement, and teacher support, highlighting the significance of teacher participation in promoting student engagement with technology in learning environments. All of these studies point to the possibility that using information technology to improve academic achievements and student engagement in middle school can be accomplished in concert with teacher support. Furthermore, Theoretical frameworks and innovations in school reform have an impact on students' participation in learning activities (Marks, 2000). Through the interaction of technological acceptability and learning motivation, teacher support has a strong correlation with students' engagement in their studies (Fu-hai et al., 2022). Students are much more interested and successful when technology is included into science classes in middle schools (Alghamdi, 2020). By using interactive technology to provide an inviting classroom and increase student engagement, teachers are crucial (Ibarra & Lu, 2021).

**Keywords:** information technology, middle school, student engagement, digital devices, educational technology, mixed-methods research.

### 1.0 INTRODUCTION

Information technology (IT) is widely used in education in the modern digital age, providing a wealth of chances for engagement and learning. Students in middle school, in particular, grow up in an increasingly digitally advanced world both inside and outside of the classroom. IT integration has the potential to improve learning environments, but its effect on student involvement is still up for discussion. Pupils who are actively involved in their studies are more likely to succeed academically and form a lifetime of learning. Therefore, in order to maximize the advantages of technology while minimizing its possible downsides, educators and

legislators must have a thorough understanding of how IT affects middle school kids' levels of participation. The context of teaching and learning has changed as a result of the incorporation of information technology into educational settings, giving new chances to raise student participation. Students in middle school, in particular, stand to gain from the creative application of technology in the classroom. The impact of a one-to-one computer effort on eighth-grade students and teachers is examined in research by Storz & Hoffman (2013), which highlights the experiences and voices of those working in an urban middle school in the Midwest. Ritchie et al. (2010) also looked at how a science-writing project affected students' scientific literacy, highlighting how technology-enhanced projects might improve learning outcomes and engagement. These studies highlight how crucial it is to use information technology in middle school settings to promote student engagement and academic success. A key component of middle school pupils' general growth and academic performance is their participation in the learning process. Student involvement may be greatly impacted by the use of information technology in educational environments. The study conducted by Fu-Hai et al. (2022) investigates the correlation between teenagers' learning engagement and their perception of teacher assistance. It emphasizes the moderating influence of technological adoption and learning motivation in this relationship. Furthermore, Labonté & Smith (2022) explore how middle school children perceive collaborative and self-directed learning with and without technology, providing insight into how technology affects student involvement. These findings highlight how crucial it is to comprehend how middle school students' participation with information technology affects their learning experiences and results.

## **2.0 INVESTIGATED THE ENGAGEMENT THAT ADULTS ARE WITH MIDDLE SCHOOL CHILDREN**

Children go through significant physical, cognitive, and emotional changes during middle school. Adults are extremely important in determining the course of adolescents' intellectual and developmental growth during this transitional time. The involvement of adults in middle school students' lives has a big impact on their development and achievement, whether it comes from mentors leading extracurricular activities, parents offering emotional support at home, or instructors imparting knowledge in the classroom. It is crucial to comprehend the subtleties of adult involvement and how it affects middle school students in order to establish nurturing environments that promote holistic development. Fredricks et al. (2019) explored the relationship between early teenage adolescents' school involvement and the quantity of loving and supporting adults in their neighborhood, school, and home. According to the study, students who said they had supporting adults in their lives showed higher levels of behavioral and psychological involvement with their education. In addition, in order to better understand how supportive parental and teacher participation fosters adolescents' academic engagement, especially as they go into middle school, Rickert & Skinner (2022) performed a study. Although warm adult participation can have favorable effects, there is evidence that these relationships may change as pupils go from elementary to middle school. In their investigation of family-school engagement across childhood and teenage development, Smith et al. (2019) offered new perspectives on the relationship between family-school engagement and student outcomes in elementary, middle, and high school contexts. The results of the study provide more evidence for the value of family-school involvement in fostering successful student outcomes. Together, these studies illustrate the critical role that parents and other supporting adults have in helping middle school kids become engaged in their education. They also stress

the importance of strong adult relationships and involvement in encouraging the success and well-being of students. In a study published in 2012, Wang & Eccles examined the long-term impacts of social support on three aspects of student participation from middle to high school. The study made clear how crucial social support is in affecting children's long-term school involvement, especially peer and teacher support. The studies mentioned above collectively highlight the important role of various support systems, such as parental participation and social support from classmates and teachers, in promoting middle school children's school engagement.

### **3.0 THE INVOLVEMENT AND COMMITMENT OF STUDENTS IN A VARIETY OF SUBJECTS**

Students' commitment and involvement in a range of subjects are essential components of their performance in the classroom and their overall learning objectives. Studies have indicated that pupils who actively participate in their education typically achieve higher academic standards and possess a more profound comprehension of the subject matter. A study conducted in 2004 by Fredricks, Blumenfeld, and Paris brought attention to how crucial student engagement is in predicting academic success. They discovered that motivated students who were actively involved in their education were more likely to persevere in the face of difficulties. Furthermore, for student involvement and commitment in a variety of areas, the following research provide insightful information. In an effort to increase student engagement, Bimczok & Graves (2020) developed an innovative model for a graduate student journal club that placed a strong emphasis on topic-centered learning. This approach places a high value on student participation and encourages dialogue on a range of scientific topics. In a study published in 2016, Mateos et al. used a radar representation to compare the degrees of university student participation in various programs. Their results emphasized the typical degree of involvement and emphasized that students' primary characteristic was devotion. Appleton, Christenson, and Furlong explored important methodological and conceptual facets of student participation. The importance of understanding and assessing student participation in educational situations was emphasized by their work. In combination, these studies provide insight into a variety of aspects of student engagement from a variety of academic subjects, such as commitment, involvement, and absorption. They aid in the comprehension of the variables impacting students' dedication to learning and performance in the classroom. Research has indicated that a range of factors, including connections between teachers and students, instructional strategies, the relevance of the curriculum, and individual interests, affect students' levels of engagement and commitment in a variety of disciplines (Niemic et al., 2006). Furthermore, sociodemographic variables that affect students' views and attitudes toward particular subjects include gender, ethnicity, and socioeconomic position (Wigfield & Eccles, 2000).

### **4.0 INFORMATION TECHNOLOGY USE BY MIDDLE SCHOOL PUPILS IS A SUBJECT THAT EDUCATIONAL RESEARCHERS ARE BECOMING MORE AND MORE INTERESTED IN**

Educational experts have been focusing more and more attention to middle school students' usage of information technology (IT) in recent years. It is now critical for educators, politicians, and academics to understand how middle school kids use IT and how it affects their learning experiences due to the widespread use of digital devices, internet connectivity, and

instructional software. Researchers in education are becoming more interested in the topic of middle school pupils' use of information technology. Research works like Alowayyid (2023)'s study on the application of 21st-century skills by female middle school students and Novalić's inquiry on the impact of electronic education on Islamic science students Novalić et al. (2021) offer insightful information about how technology affects students' educational experiences. Furthermore, talk about how Huizenga et al. (2009) used mobile game-based learning to increase motivation and participation in secondary school. According to research, middle school kids who participate actively in sports have higher academic success (Pjanić et al., 2021). This suggests that extracurricular activities like athletics can improve students' overall academic ability. Moreover, stress the significance of inclusive practices and student accomplishment, emphasizing the need for educational settings to take varied student experiences into account (Florian et al., 2004). It is important for understanding the viewpoints and experiences of the students. Analysis on students' opinions regarding the way teachers treat them, like that done by Thornberg (2008) and Stevens (2009) provide useful data about how students view their learning environment when it comes to students' complaints of school policies. Furthermore, Macura-Milovanović et al. (2013) highlight the significance of both academic and emotional assistance in fostering student involvement, drawing on their research on the identification of Roma students with schools. In summary, research on the use of ICT, extracurricular activities, inclusive practices, and student views all add to a thorough knowledge of the educational experiences of middle school students. Teachers and legislators can better promote middle school children' overall development and academic achievement by taking these varied factors into account.

## **5.0 TEACHERS MUST BE COMPETENT AT USING TECHNOLOGICAL RESOURCES AND TECHNIQUES.**

It is important to give teachers the right kind of assistance and training to guarantee that they are skilled in the use of technology tools and resources. For instructors to successfully incorporate technology into their lesson plans, professional development programs are essential, according to research by Ertmer et al. Furthermore, the requirement for instructors to have a thorough understanding of how technology can improve pedagogy and subject knowledge is highlighted by Mishra and Koehler's Technological Pedagogical subject Knowledge (TPACK) paradigm. Additionally, research on the effects of technology integration training on teachers' attitudes and beliefs, as well as studies on the efficacy of online professional development for teachers, like those conducted by Sang et al. and Archambault et al., offer important insights into the tactics that can be used to improve teachers' technological competencies. The significance of offering teachers professional development opportunities and training to improve their proficiency in utilizing technology in the classroom is emphasized by these references. They emphasize the value of helping educators become more proficient, self-assured, and tech-savvy, as well as the necessity of continuous support and the incorporation of digital resources into instructional strategies. Educational institutions can better equip instructors to use digital tools for better teaching and learning outcomes by incorporating the ideas from these studies. The range of technology available to novice teachers can be overwhelming, and they often feel unqualified to make decisions regarding the best development, selection, and use of tools and resources. (2014) Williams et al. Teachers need more than just software training or access to technological tools like a Smartboard to develop the skillset and mindset necessary for e-leadership. Actually, they must first learn the way to

learn in technology, gain confidence in using it, and feel comfortable trying new things (Preston et al., 2014). Apart from providing teachers with tools, it is essential to provide them with professional development (PD) that aids in their understanding of how to use the tools into their lessons (Love et al., 2020). Instructors have stated that in addition to understanding how different technologies operate, they also require training in the best practices for integrating educational technology into the curriculum (Lock & Kingsley, 2007). 30 pre-service social studies teachers participated in the study.

## **6.0 STUDENTS THAT ARE EXPOSED TO INFORMATION TECHNOLOGY HAVE A GREATER CHANCE TO LEARN THE TECHNICAL SKILLS**

Many studies highlight the importance it is to educate students with technical skills in order to prepare them for future work. According to Engle (2021), in order to support the expansion of aquaculture, a workforce with good information technology skills is essential. In the same way, Gerke et al. (2022) address the qualifications needed for the quantum workforce of the future, focusing on the identification of skills and knowledge in quantum information technology. The importance of scenario analysis and workforce planning in shaping policies for the future workforce is brought up by Rees et al. (2020). In his discussion of the workforce development for cybersecurity, Almoughem (2023) emphasizes the value of social and organizational abilities in addition to technical skills for success in the workforce in the future. The references given provide interesting details about how kids' exposure to technology affects their development of digital literacy and technical abilities, two things that are critical for success in the workforce of the future. These studies emphasize how crucial it is to include technology into classroom environments in order to get pupils ready for the demands of the digital age. Schools can better prepare students to succeed in the changing labor market by implementing these insights into their curricula. Furthermore, According to Brata et al.'s investigation (2022), there is a favorable association between digital literacy and learning outcomes. The study's conclusions show that pupils have strong digital literacy abilities (Anggraeni, 2023). The findings indicate that 21st-century talents are predicted by pupils' digital literacy (Özeren, 2023). It is evident from the references given that students' technical skills and digital literacy are greatly improved by exposure to information technology. Research by, and other authors show how digital literacy improves learning outcomes and helps students learn 21st-century abilities. According to these results, pupils who are exposed to information technology are more likely to learn the technical skills required for success in the workforce in the future. Schools may successfully educate students for the demands of the digital age and give them the fundamental skills they need to succeed in the changing labor market by using technology into their instructional techniques.

## **7.0 CONCLUSIONS**

According on the cited sources, it is clear that middle school kids' participation can be greatly impacted by their exposure to information technology. Research by Mohr-Schroeder et al., Woolley and Bowen, Fu-Hai et al., and others emphasize the value of technology exposure in raising students' motivation, interest, and involvement in STEM disciplines. Furthermore, Yang et al.'s research highlights how technology may support student involvement and the application of 21st-century abilities. Additionally, research by Labonté, Smith, Roberts, and Matzen explores how integrating technology into the classroom can affect students'

experiences with self-directed and collaborative learning, resulting in higher levels of engagement. Schools can establish more engaged and engaging learning environments for middle school students by integrating technology into their instructional practices. The utilization of technological tools and resources has the potential to augment pupils' enthusiasm for STEM fields, elevate their scholastic achievements, and cultivate a more profound involvement with educational endeavors. All things considered, integrating technology into the classroom can be extremely important for encouraging student involvement and getting them ready for success in the digital age. In conclusion, information technology has a big impact on middle school kids' participation because it improves learning opportunities, encourages teamwork, helps them develop critical skills, and solves issues like equal access and digital distractions. Information technology may be a potent instrument for raising student engagement and getting them ready for success in the digital age, with the right support and direction.

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