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# Understanding why teachers entrust technology in innovating the learning outcomes

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## ABSTRACT

This study aims to analyze why elementary school and college educators trust technology to achieve teaching and learning outcomes. To discuss in order to answer the problem comprehensively and with high validity, we have collected data with the help of technology in a database of academic works such as journals, books, proceedings, magazines, and digital era educational technology websites. This study relies on secondary data with a phenomenological approach, exploring the broadest data often done in descriptive qualitative studies of social sciences and humanities. Examples of databases that we are targeting are the publications of Sagepub, Elsevier, Taylor & Francis, Google Books, and ERIC, which we specifically focus on for the latest issues between 2015 and 2021. Based on the data, findings and discussions can be summarized, between educators at both basic education levels until universities rely on ways to improve learning outcomes on the advantages and benefits of technology because of the effectiveness, innovation, and productivity of technology compared to teaching methods before the emergence of today's technology. The results of this study are expected to assist in the development of future technology and education studies.



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## Introduction

The undeniable fact is that technology, especially in educational technology, has been proven to help students and teachers with exciting learning offerings that can create collaborations that were never imagined long before technological innovations appeared (Rahamat et al., 2017). At that time, technology was only used outside of education. The best method is a system of memorization and memory on the content or facts of knowledge. The hope is that students can reflect, remember, and answer questions in the form of memory, and only those with solid memories can achieve high scores. So, they are said to be successful or achievers (Pedro et al., 2018). However, since the emergence of digital technology, learning is no longer considered a process that only involves memory and thinking or cognitive factors, but with the presence of this technology, it is a new chapter where technology can provide opportunities for the educational community for uninterrupted information, so learning is not possible.

Again in the remembering process but beyond that, the opportunity to get learning outcomes can be accelerated by personalizing learning through the convenience of technology so that students and teachers can invite the school learning community to be able to explore various learning topics and allow deepening of any difficult concept of understanding so that it becomes an ability to apply to understand a concept, in

other words, students not only remember the content but also have the opportunity to understand information, organize information, apply information and accelerate learning in innovatively, creatively and productively (Goldie, 2016). With the emergence of educational technology that not only helps students to research, explores, study, share and continue to share all the knowledge and skills they have, but the point of educational technology also allows very flexible learning that is very innovative so that students can work even though the presence of a teacher or supervisor is minimal. With technology, students can collaborate in solving problems into critical thinking that previously would not have happened (Rannastu-Avalos & Siiman, 2020).

In other words, technology is related to the purpose of learning technology; now, it is no longer something outside the student room but has become a learning tool, say tablet computers and the like, that can expand the range of student experiential learning, even subject content material that is no longer focused on books and teachers (Timms, 2016), but becoming a collaboration an innovation, an exploration of various content and skills that are now the demands of the 21st century(Nuere & de Miguel, 2021). Not only does it involve experts but allows this technology to involve students who are sitting in school classes because of that benefit, technology has now become an idol's dream, even Partners, rather than teachers ranging from kindergarten, elementary school, high school, to postgraduate programs and even doctoral level. All educators now trust digital technology's collaboration and product innovation in the 21st century (Ali, 2020).

Learning achievement results from measuring students, which includes aspects of attitude or affective and psychomotor thinking (Wijoyo et al., 2020). After the students are provided with various lesson content and evaluated using the existing evaluation system, in other words, student achievement can be measured through exams or called student learning achievement tests (Yulastri et al., 2018). Technology to improve student learning outcomes, especially when studying and digital technology, cannot be separated anymore because research evidence provides understanding and determination that technology, mainly digital, has been proven to improve and accelerate learning (Buckingham, 2013). Students have to be in school by saving time, significantly if a pandemic disrupts the world's education. So that the presence of technology is one of the most effective solutions to allow students and teachers to interact without having to meet in class at school for reasons of responding to the policy of closing and stopping all social activities, including education from elementary schools to high schools and colleges(Hodges et al., 2020), for such conditions, expect a carefully integrated solution that can be implemented into learning, namely:

Advanced educational technology has been shown to allow students to adapt to accelerated learning where students need extra time and spend it outside of school by running exercises and getting more tutorials (Walkington, 2013). This way allows this learning to continue until all students get a learning continuity activity book following the wishes and ways of children learning, which now they live in the millennial era where without having to go to school, technology is required, but in fact, the younger generation of students do live and grow up with technology. (Au-Yong-Oliveira et al., 2018). When technology can be adopted and integrated into the learning environment, it is believed that this is the best solution that has been proven to overcome various problems, such as how direct interaction class management cannot do. However, students can learn how to involve parents in the classroom, at home, and also how students can interact creatively dynamically in using digital for their learning (McDougall et al., 2018).

Based on the evidence of the study above, on the issue of technological excellence in revolutionizing learning outcomes in this digital era (Abdinazarovna & Rustamovna, 2022). So further studies are needed that try to understand how technology can support smooth learning. How the ease of technology has helped accelerate learning in an era that is currently being disrupted by a pandemic outbreak, studies related to these two variables continue to be encouraged to gain in-depth understanding (Verna et al., 2020). How and why educational components such as curriculum designers, educators and especially students believe in the advantages of digital technology so that it is maintained as one of the methods in learning that can revolutionize and innovate in accelerating student learning (Fichman et al., 2014). It has been proven that using digital-based learning technology must be continuously involved in accelerated learning programs that have been proven to help parties in education, such as school principals and teachers. As well as supervisors, all stakeholders will easily facilitate professional running learning and higher personalization(Glatthorn et al., 2016).

It is recognized that the 21st century is the century of the technology and information revolution where part of educational technology has been able to innovate learning where it is seen that there has been an increase in competence in both learning and teaching (Simai, 2019). This has been confirmed in many academic studies so that technology has increased students' motivation for work and achievement. In



addition, technology also motivates positive behavior towards educators and other digital technology users. So, study after study is an effort to instill enthusiasm and develop work spirit as young people close to technology and educated people who adhere to scientific principles with a technological approach (Kolb, 2014). So, the acceleration of scientific work projects through digital technology-based education allows it to be accelerated and updated along with the progress of the times and technological civilization in education (syakur Nusantara, 2018).

Another reason technology helps stakeholders in education is its superiority in transferring all kinds of content, knowledge, skills, and behaviors (Skinner, 2019). These digital skills are also owned by educators who cannot be ignored. However, these issues must be studied continuously to be brought to the surface so that the learning community and other communities will have a higher understanding and application in solving problems both in education and future career work. Therefore, studies that try to solve learning problems both in crisis and classic eras must be supported so that the wider community will better understand the accelerated learning strategy (Fullan & Langworthy, 2014). The emergence of cutting-edge technology in education is marked by the emergence of applications that are devoted to the development of the latest education, including digital technology, which is a literacy that tries to help educators and students to access information, analyze, collect, present, and produce, import new information or knowledge (Benneworth & Cunha, 2015).

On the other hand, the usefulness of technology is clear to support teaching and learning because this technology can not only be included in the study room but also becomes an infrastructure that students can use (Huda et al., 2018) when they are no longer in school then with good technological literacy, it is possible for students and parents, teachers and also the management of educational settings further to deepen their understanding and experience in mastering materials to support learning (Noor-UI-Amin, 2013). This opportunity is not only while studying at school, but becomes a continuous process in a day and then seven days a week continues to build, hone skills and improve the quality of learning by involving technology in education (Blackwell et al., 2013).

### Method

In this method, we will discuss the procedure for carrying out this review study. The main goal is to discuss the logical reasons why educators from elementary school to postgraduate believe in the superiority of technology to revolutionize learning with the help of technology to achieve learning and teaching achievement (Ratheeswari, 2018). The discussion of this study has succeeded in answering the problem comprehensively and with high validity by searching and analyzing data from some databaseddatabased sources. We have collected data with the help of technology in academic works such as journals, books, proceedings, magazines, and educational technology websites. Digital. Examples of databases we are targeting are publications Sagepub, Elsevier, Taylor & Francis, Google Books, and ERIC, which we specifically focus on for the most recent editions between 2010 and 2021 (Koziol & Arthur, 2011). This study relies on secondary data with a phenomenological approach, exploring the broadest data often done in descriptive qualitative studies of social sciences and humanities. We follow the design of this study, following the directions and model of the study data that have been successfully carried out in previous technology studies (Tarrant, 2017).

#### **Result and Discussion**

#### Technology in Education crisis

As explained above, one of the advantages of applying technology in learning in all standard and crisis conditions is to look at the advantages of technology, including technological advantages in solving educational problems affected by crises such as the covid outbreak (Bawaneh, 2021). The solution is that when education is disrupted, the development of science and knowledge becomes hampered, along with that technology comes to overcome it and what makes technology superior is its ability to organize well accompanied by excellent flexibility in various application contexts, in this case, the context of elementary school to high school. Postgraduate (Rahiem, 2020). Those are, among others, the benefits of technology that is ready to renovate learning for the sake of continuity of education by applying technology to the school sector, especially for teachers and students, so that the knowledge and information crisis is not left behind. In other words, technology is also impressive, which is very interesting not only providing additional knowledge but also providing an exciting experience for students where the use of technology is fun



compared to traditional methods and effectiveness for achieving strengthening the acceleration of learning in schools despite being in a pandemic emergency (Ahmed & Opoku, 2022).

In addition to the advantages of technology in accelerating learning through increasing students' knowledge and skills, it turns out that technology has also changed the way humans communicate, obtains career learning information, and even how play, including economic game matters if it has an impact on survival rather than education (McKnight et al., 2016). Another positive thing from other technologies used for education is the acceleration of student learning outcomes, not to mention when compared to the mass of chalk and blackboard-based learning, the benefits and comparative advantages of the presence of technology in this educational revolution have increased awareness that how important it is that teaching is integrated with technology and the spread of technology. Technologies enable the achievement of exceptional educational outcomes (Eldridge, 2014). The reason is that when technology enters education, its output will develop continuously, thereby providing tremendous benefits to all components; students, schools, families, and communities as educated HR users (Ratheeswari, 2018).

#### Attitudes on technology

Efforts to accelerate learning outcomes in this multi-crisis era through the application of education-based technology are also inseparable from the attitude of standing on students and other educational communities (Hendriarto, 2021). In the context of using technology, the positive attitude factor in technology is significant, where technology users, in this case, students, must be introduced to a positive attitude so that the brush will give productive results (Kaushal & Srivastava, 2021). In other words, they must understand that working in this technological era requires technology with a positive attitude that improves. Associated with attitudes (Ardies et al., 2015)said that acceptance of technology varies greatly, the better the level of acceptance of technology, the farther it will have a significant impact on development so here on education management, primarily via educational institutions where rather than technology must come from a school which then becomes the thing that guides students to have a positive, productive attitude towards the effectiveness provided by technology in terms of achieving increased quality of student learning outcomes (Kirkwood & Price, 2014).

Thus, the use of technology will work well if the learner's attitude to media and learning technology where the involvement of this learning media technology provides a high value (Mertala, 2020). In the sense that technology is believed to be able to renovate, innovate and revolutionize learning, which has been constrained by the presence of technology and also which is still lower than education providers, especially by the government, which has not seen a solution from technology, something that is very extraordinary and is a step that must be accelerated and pursued with all efforts—way (Setiyatna et al., 2019).

#### **Technology and Teachers**

Technology and teachers cannot be separated no matter how sophisticated technology can help accelerate education (McKnight et al., 2016). Why is that? The answer is because the teacher is the one who uses the means of technology to achieve his teaching goals, not the other way around. Teachers as human beings deliberately apply technology as human assistants so that technology may not replace the role of teachers whose goal is that teacher productivity can be achieved after using technology (Gilakjani et al., 2013). In other words, it is the teacher who applies digital equipment in their daily work. Because the principle of benefit from digital technology is its ability to expand students' learning opportunities through exploration with all the literacy they have used to improve their learning outcomes. This way allows teachers to have conversations about improving and accelerating student teaching through a personalized learning system (Rickabaugh, 2016).

So, after all, teachers without the presence of this cutting-edge technology are unlikely to have trouble changing the results of teaching to the fullest because the technology was indeed created with its efficacy that supports changing the face of education with all renovations and innovations starting to make it easier for teachers to design teaching materials to new ways for teachers not only to learn but work together to achieve maximum learning outcomes (Liton, 2015). Furthermore, this final technology is indeed significant for teachers because technology is one of the ways to enable every student to have a technology tool with software that helps them obtain information, analyze and use that information for learning purposes from the learning period to the subsequent evaluation of learning outcomes(Wentworth & Middleton, 2014). Because these technological advantages make it very helpful for teachers to be able to connect a lot of teaching content that may be mastered but may be taught and only requires teaching literacy so that teachers can change the way of learning directions and goals with the achievement of higher results than traditional teaching methods (Bereiter & Scardamalia, 1989).



#### **Evaluating technology**

Having the ability to evaluate the performance of the technology is a must for a teacher because every choice of technology used in teaching certainly impacts achieving the goals of teaching (Havice et al., 2018). So, the teacher certainly must have the ability to review and ascertain every advantage and disadvantage possessed by the technological devices used in teaching. (D. Shin et al., 2018). The trick is finding out and ensuring that this set of technologies is suitable for use in a particular class. In addition, using technology also follows ethical rules where the application of ethical technology is a practical matter rather than technology (S.-K. Shin, 2015). This way is because the new test impacts teaching; of course, what is desired is the technology that makes teachers and students have a positive impact. Technology is one of the resources or learning resources (Helle et al., 2013). So, the technology will later determine the quality of the content or material provided on the technology.

Therefore, a teacher must be able to know the criteria for evaluating educational technology in general, which includes the purpose of teaching or education, determining targets or audiences or student functions, then the authority and credibility of the technology, including the accuracy, reliability, technology, reasonableness, and effectiveness of time and also other ordinary things. Criteria in evaluating each use of technology in teaching (Shen et al., 2016). Every teacher needs to have a skill in assessing a technology product with software owned in educational devices because it allows teachers to assess student performance appropriately. In other words, technology, such as how to improve teaching skills, including evaluations that are rubric or other holistic and analytical systems (Clunie et al., 2018).

By assessing the software owned by technology, a teacher will be able to decide which technology is better that is appropriate to use and so that teachers understand how to operate and integrate all software owned by a particular technology effectively and efficiently so that the value of productivity in learning (Ribble, 2015). Finally, evaluation of educational technology for teachers is critical as long as the teacher wants to carry out his teaching successfully and achieve teaching goals and make students happy with the material provided to achieve the true learning objectives(Galluzzi et al., 2015).

#### Innovating technology into learning

Efforts to integrate technology in learning which is an effort to accelerate learning outcomes, is one way that has been proven in teaching today (Admiraal et al., 2016). The reason is that information technology in education can increase interaction and engagement and gain knowledge quickly when technology is integrated into student learning to be more integrated with the lessons they take before there was technology (Rehmat & Bailey, 2014). Then now, the question is the importance of efforts to integrate content in education; the answer is based on educational innovations that are increasingly developing so that their adaptation into learning can increase teacher and student collaboration (Ruggiero & Mong, 2015). When teachers and students are effectively involved in learning together, their learning will grow into a gratifying process, both in terms of learning instructions, displaying quality content, and an effective learning exercise process. This helps make the teaching and learning process more fun and educational(Hilton et al., 2016).

Likewise, technology benefits the learning process where technology can bind students to use various technology applications so that they in the classroom become more different in terms of collaboration where technology makes it easier for students to work together to exchange information and share in addition to technology(Maghool et al., 2018). Thus, student participation will be more because technology provides higher productivity coupled with the creativity and automation in technology (Papageorgiou et al., 2018). Moreover, more importantly, technology can focus the vision and teaching on a future where sick technology is showing evolution and revolution that promises continuous change(Chakraborti et al., 2020). So, technology integration is an effort made by both teachers and students to intentionally use this facility so that the content presented by technology supports education so that it allows students to apply computer operating skills so that technology itself can automatically read the problems that have been a gap so far in technology—teaching and learning process (Abonamah et al., 2019). The other impact of technology is an integral part of how teachers function in the classroom, such as access which, if the teacher does not have it, can be helped by the reliability of the technology.

When viewed from the influence of teaching by technology, and logically it can be said that tools that help to teach, such as ensuring that each lesson is easy to understand with a system of sharing understanding and reviewing certain content (Hamiti & Reka, 2012). Finally, we believe that technology allows the principle of flexibility in education so that this effort allows the school community to collaborate in a more effective way that is more accommodating and can reduce the occult that has often occurred in the practice of the world of education anywhere.



#### Conclusion

The logical reasons why educators from elementary to postgraduate schools believe in the superiority of technology to revolutionize learning with the help of technology to achieve learning and teaching achievement. The discussion of this study has succeeded in answering the problem comprehensively and with high validity by searching and analyzing data from several database sources. We have collected data with the help of technology in academic journals, books, proceedings, and databased websites. This study relies on secondary data with a phenomenological approach, exploring the broadest data that is often done in descriptive qualitative studies of social sciences and humanities. We can summarize that teachers from elementary schools to universities entrust the application of technology in face-to-face and online classrooms. The reasons are, among others, that technology has advantages in renovating learning in an automated and effective manner to achieve student outcomes and achievements both in regular times and during the pandemic crisis. Another conclusion is that technology is part of teaching in the digital era, where students are born when the technology exists. So, based on this research evidence, we believe that we have answered the problem of this study on a valid and reliable basis. Thus, hopefully, the results of this study will become a treasure trove of scientific and educational technology studies in the future.

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