

Transforming Accounting Learning: The Impact of Traditional to Digital-Based Change on Student Learning Achievement

Transformasi Pembelajaran Akuntansi: Dampak Perubahan Berbasis Tradisional ke Digital terhadap Prestasi Belajar Siswa

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Dian Sutiana¹, Suranto^{1*}

¹Universitas Muhammadiyah Surakarta, Surakarta, Indonesia

*E-mail: sur122@ums.ac.id

Abstract

The development of technology, particularly in the field of education, plays a strategic role in enhancing the quality of learning and student achievement. This research focuses on digital transformation in accounting education at vocational schools in Surakarta, exploring how the application of technology can support the improvement of student learning outcomes. The research approach is qualitative, with data collected through in-depth interviews and direct observations at three schools: SMK Negeri 1 Surakarta, SMK Negeri 3 Surakarta, and SMK Negeri 6 Surakarta. The research informants include 8 teachers and 6 students from the Accounting program. The results indicate that the implementation of digital technology in the accounting learning process has transformed teaching methods to be more innovative and interactive. This not only enhances students' understanding of accounting concepts but also motivates them to be more active in their learning. Furthermore, this digital transformation positively impacts the mastery of technical skills, such as the use of modern accounting software relevant to industry needs. Student achievement has shown improvement in both academic aspects and practical skills. Overall, this research underscores that the integration of technology in education can serve as an important catalyst in supporting learning success and preparing students for the workforce.

Keywords: Learning transformation, digital, learning achievement.

Abstrak

Perkembangan teknologi, khususnya di bidang pendidikan, memiliki peran strategis dalam meningkatkan kualitas pembelajaran dan prestasi siswa. Penelitian ini berfokus pada transformasi digital dalam pembelajaran akuntansi di SMK Surakarta untuk mengeksplorasi bagaimana penerapan teknologi dapat mendukung peningkatan prestasi belajar siswa. Pendekatan penelitian ini bersifat kualitatif, dengan data yang diperoleh melalui wawancara mendalam dan observasi langsung di tiga sekolah, yaitu SMK Negeri 1 Surakarta, SMK Negeri 3 Surakarta, dan SMK Negeri 6 Surakarta. Informan penelitian meliputi 8 guru dan 6 siswa dari jurusan Akuntansi. Hasil penelitian menunjukkan bahwa penerapan teknologi digital dalam proses pembelajaran akuntansi telah mengubah cara pengajaran menjadi lebih inovatif dan interaktif. Hal ini tidak hanya meningkatkan pemahaman siswa terhadap konsep akuntansi, tetapi juga memotivasi mereka untuk lebih aktif dalam belajar. Selain itu, transformasi digital ini juga memberikan dampak positif terhadap penguasaan keterampilan teknis, seperti penggunaan perangkat lunak akuntansi modern yang relevan dengan kebutuhan industri. Prestasi siswa terlihat meningkat baik dalam aspek akademik maupun kemampuan praktis. Secara keseluruhan, penelitian ini menegaskan bahwa integrasi teknologi dalam pendidikan dapat menjadi katalisator penting untuk mendukung keberhasilan belajar dan kesiapan siswa menghadapi dunia kerja.

Kata Kunci: Transformasi pembelajaran, digital, prestasi belajar.

1. Introduction

Technological advancements in education have revolutionized the way learning and teaching are conducted, allowing the learning process to be more dynamic, interactive and affordable. Digital transformation is an adaptation process in which digital advances replace conventional methods to achieve higher productivity and more optimal results. The issue of digitization of education has become an important topic in humanity's scientific and theoretical discourse, along with the rapid development of digital information and technology (Solovei et al., 2023). As a result, education around the world must reconsider its strategies and implement digitalization to remain competitive in the education services market (Stoyanova et al., 2024). The use of technology in accounting education allows students access to real accounting software, interactive learning modules, and immediate feedback, which deepens their understanding of concepts and improves their practical skills. The transfer of knowledge, skills, abilities and the application of knowledge monitoring is carried out through the use of computers, smartphones, and tablets (Tsarapkina et al., 2021). The utilization and implementation of technology is a crucial element in the effort to improve the capabilities of the Indonesian workforce, so that the country can remain globally competitive and not be underdeveloped compared to other countries (Toquero, 2020).

Education plays an important role in shaping development in the digital era, where digital technology is the main driver of significant change while posing various challenges in the context of the modern world globally (Aditya & Suranto, 2024). The development of new technologies and methods that integrate the physical, digital, and biological worlds is fundamentally changing lifestyles and ways of human interaction (Amelia et al., 2022). However, the main challenge in the current development of technological education is to overcome the gap between the technical aspects and the social impact of these technologies, while developing long term strategies to strengthen sustainable education practices (Smith et al., 2023). Therefore, many researchers are trying to find the best method of implementing digital transformation so that education can effectively adapt to the changing times.

In the past, accounting learning relied more on textbooks, lectures, and hands-on experience in the business world. However, information and communication technology has brought about a significant shift in the approach to learning. In principle, the scope of education tends to be reactive, where new disruptive technologies are often pioneered in other industries, then applied to the current educational culture and system (Wang et al., 2023).

Such technological models have the potential to increase efficiency and accuracy in recognizing accounting elements and reduce the waste of human and material resources in recognizing accounting data on a large scale (McCarthy et al., 2023). In addition, technological advances can enhance the learning process by encouraging a participatory culture and empowering users, thereby contributing to improved student achievement (Manca et al., 2023).

The transformation of accounting learning from traditional to digital approaches has posed diverse challenges that need to be addressed in improving student learning achievement. Recent research has identified the link between the impact of digital technology transformation and the phenomenon of digital transformation itself. There is limited understanding of how students engage with learning technologies and the extent to which such engagement can lead to improved learning outcomes (Nkomo et al., 2021).

Students need to adapt quickly to digital tools and platforms, while educators must develop effective strategies to harness the full potential of such technologies in improving the understanding of accounting concepts. As a result, technical and social gaps in education include inequalities in

technology access and skills and social isolation of students. The impacts include stress and life imbalance due to rapid adaptation to new technologies, as well as the need for continuous development of educational strategies, including teacher training, curriculum innovation, infrastructure investment, and adaptation to digital tools and platforms to improve student learning achievement.

The transformation of accounting learning from traditional to digital methods brings various challenges that require creative solutions to improve student learning achievement. Digital transformation is becoming inevitable in organizations and society, thus driving various changes to remain competitive (Ufua et al., 2021). Young people need to understand and have the ability to make informed decisions about how to use digital technologies meaningfully in everyday life (Iivari et al., 2020). Digital learning is an effective method to reduce costs, maximize resource use, promote sustainability, and expand reach and impact for students and teachers (Beardsley et al., 2021). Traditional classroom teaching cannot provide an environment of rapid learning, faster evaluation, and higher engagement. Instead, digital learning tools and technologies are able to fill these gaps. Some of the efficiencies offered by such technologies cannot be matched by traditional learning methods (Haleem et al., 2022). This allows teachers and students to benefit from the dynamic digital era (Gizaw & Tessema, 2020). According to Al-Hattami (2023), the application of technology considers not only its benefits and ease of use but also its social impact and self-efficiency.

In particular, for accounting students, technology has a dual role. Technology not only facilitates human management of financial data, but also serves as an important instrument for data analysis and synthesis (Damayanti Peoni & Tungka, 2022). It has been recognized that to remain competitive in the evolving digital education space, it is necessary to introduce digital platforms into the learning process. This requires analytical and scientific methodological studies regarding the implementation of such changes (Ruzanova et al., 2022). Educational institutions must develop qualified human resources as well as knowledge, competencies, and skills that match the various changes taking place (Bygstad et al., 2022). The purpose of the research on the use of technology in learning accounting at vocational schools in Surakarta is to understand how the integration of digital tools can improve efficiency and accuracy in the introduction of accounting elements, with a positive impact on student achievement. The novelty of this study lies in the application of a combination of interactive accounting software, simulations, and digital learning platforms specifically tailored to the curriculum of SMK in Surakarta, thus providing a more contextual and relevant approach. The strength of this research is its focus on technology integration that not only enhances students' cognitive aspects but also strengthens their motivation and active engagement in the learning process, thus expected to result in more optimal and sustainable academic achievement.

2. Literature Review

The transformation of accounting learning from traditional to digital methods is an adaptive effort to the rapid development of technology in education. The development of technology brings significant changes in the teaching-learning process, especially through the use of interactive platforms and accounting software applications. Previous research shows that technology can improve learning efficiency, deepen concept understanding, and encourage practical skills of student participants. In the accounting context, software such as MYOB, Accurate, and Zahir facilitate practice-based learning, which connects theory with the needs of the working world (Dias-Oliveira et al., 2024). The urgency of this research arises from the need to address the

challenges of digital transformation in the accounting education sector. According to [Stoyanova et al. \(2024\)](#), noted that digitalization is a major factor in maintaining the competitiveness of educational institutions. Meanwhile, according to [Solovei et al. \(2023\)](#), education must integrate technology to bridge the gap between students' technical skills and industry demands. However, the transition to digital learning is not free from challenges, such as limited internet access, technical constraints, and the need for additional training for teachers ([Lohr et al., 2024](#)).

Previous research highlights the important role of teachers in supporting technology implementation, especially in the context of vocational learning, such as accounting in vocational schools. [Bardach \(2020\)](#) asserts that teaching quality, including teachers' technological skills, greatly contributes to students' academic achievement in the field. Therefore, regular training for accounting teachers to improve their technological capabilities is a key solution in maximizing the potential of digital learning that is relevant to the needs of business and industry. In addition, [Susilo \(2021\)](#) emphasized the importance of curriculum renewal tailored to the characteristics of accounting learning in SMK so that technology integration can run effectively and in accordance with the demands of the digital era. According to [Toquero \(2020\)](#), technology can empower students with broad access to learning resources, but challenges such as social isolation due to digital learning need to be anticipated. Therefore, the development of educational strategies that are balanced and incorporate digital technology and traditional methods is essential to create an inclusive and holistic accounting learning experience in vocational schools. Thus, this literature review provides a solid foundation while emphasizing the urgency of research that focuses on the application of technology in learning accounting in SMK. This area has received less attention in previous studies.

In this study, the application of technology in SMK Surakarta not only improves students' learning achievement but also provides them with practical skills that are relevant to the world of work. By utilizing technology, students get a learning experience that is more flexible, interactive, and integrated with industry needs. The justification for this research is based on the importance of preparing students to face professional challenges in the digital era, so digital-based learning transformation is a must to improve the quality of education and workforce relevance.

3. Research Methods

This research was conducted in SMK Surakarta city including SMK Negeri 1 Surakarta, SMK Negeri 3 Surakarta, SMK Negeri 6 Surakarta using descriptive qualitative method. The selection of schools was based on the application of different learning technologies, as well as superior reputation and commitment to educational innovation that support the relevance of this research. Qualitative research is a method of collecting data in a natural environment to understand phenomena in depth, with the researcher as the main instrument. Sampling is purposive and ongoing, while data is collected using triangulation (combined) techniques. Data analysis is inductive, focused on meaning, not on generalization of results ([Anggito & Setiawan, 2018](#)). A qualitative descriptive research approach was used to examine the transformation of accounting learning from traditional to digital methods and its impact on student learning achievement. The qualitative descriptive method was chosen because it allows researchers to describe and understand in depth how changes in learning methods affect students' learning experiences and achievements. This research investigates how the digital era affects teachers and students in the context of learning, with a focus on understanding the impact of traditional to digital-based changes on student learning achievement.

Data collection techniques included interviews and observations. Semi-structured interviews allow researchers to dig deeper and understand the context and meaning behind the interviewees' answers. The researcher used a purposive sampling technique by selecting eight accounting teachers and six accounting students who experienced digital transformation. This technique was chosen because the interviewees were considered to have relevant experience and knowledge to provide indepth data. The results of the interviews provide an understanding of the challenges faced and the impact of the transformation of accounting learning from traditional to digital methods. Interviews were recorded and then transcribed to convert audio recordings into written text that could be analyzed. The analysis was conducted qualitatively through content analysis, which allows researchers to explore the deeper meaning of qualitative data.

Observations were conducted to deepen the understanding of the implementation and ensure compatibility with the information obtained from the interviews. This research also used triangulation techniques, which included data source triangulation and method triangulation. Data source triangulation was conducted to compare different perspectives from several sources, such as interviews with resource persons and observations. Triangulation of methods was used to combine the analysis of semi-structured interviews with the analysis of observation results to understand the viewpoints and experiences of the interviewees. The steps of data analysis in this research are consolidation, recording or coding, data reduction, and conclusion drawing.

4. Results and Discussion

4.1. Research Results

Accounting learning in the digital era continues to experience significant changes, especially at the Vocational High School level. The application of digital technology in the teaching and learning process is not only intended to replace traditional methods, but also to improve students' understanding and skills through a more practical and interactive approach. This transformation includes the utilization of digital platforms such as Google Classroom, Quizizz, and accounting software such as MYOB, Accurate, Zahir, and Excel. With the support of this technology, students can access learning materials flexibly and understand accounting concepts more deeply.

This research was conducted to understand how the application of digital technology affects accounting learning at SMK Negeri 1 Surakarta, SMK Negeri 3 Surakarta, and SMK Negeri 6 Surakarta. Observations and interviews were used to explore data related to the effectiveness, challenges, and impact of the use of technology in the learning process. The results of interviews and observations show that the learning process is not only centered on the delivery of material, but also on the development of practical skills that help students to be more active and engaged in learning. This provides an overall picture of how digital learning can facilitate students' skills and affect their learning achievement in accounting. The data generated from the interviews and presented as follows:

4.1.1. SMK Negeri 1 Surakarta

The data obtained through interviews and observations at SMK Negeri 1 Surakarta is presented in the following table:

Table.1. Results of Interviews and Observations at SMKN 1 Surakarta

Source	Results of Interview and Observation
Informan 1	The use of accounting applications and digital platforms has become an important part of learning methods. Project-based learning, such as helping MSMEs create financial reports digitally, can provide real-world experience relevant to the world of work. A challenge faced by the school is power outages, which can hamper the teaching and learning process.
Informan 2	The use of platforms such as Google Classroom allows students to do and submit assignments online. Although there are obstacles when introducing new menus in the application, students slowly get used to it and gain confidence. Available facilities such as computer labs support digital-based learning.
Informan 3	Using traditional methods takes more time. Excel and MYOB are easier to understand because they are equipped with formulas. In addition, supporting facilities make students more enthusiastic and motivated in learning.
Informan 4	Digital technology is easier to understand because it is more accurate and practical. Achievement increases because the application is equipped with formulas. Facilities and support from friends make students more motivated to learn.

Research at SMK Negeri 1 Surakarta shows that the use of the Google Classroom platform and accounting applications such as MYOB and Accurate can increase student confidence and create more interactive interaction between students and teachers. Facilities provided by the school, such as LCD, Projector, and computers, are also an important part of digital-based learning. By using digital-based learning methods, students experience an increase in learning achievement. The obstacles that are often faced when learning using digital include power outages and internet connections. Support from teachers and peers is also very important in creating a collaborative learning environment. In addition, students are also involved in real projects with local MSMEs that can improve their practical skills to face the challenges in the modern world of work.

4.1.2. SMK Negeri 3 Surakarta

Data obtained through interviews and observations at SMK Negeri 3 Surakarta are presented in the following table:

Table.2. Results of Interviews and Observations at SMKN 3 Surakarta

Source	Results of Interview and Observation
Informan 1	Since the COVID-19 pandemic, digitization has become very important in learning. Technology is now the main necessity, replacing most of the role of traditional textbooks. The obstacle faced by students is limited internet access in some classes, which requires students to use personal quotas.
Informan 2	Applications such as Canva and PowerPoint make the presentation of material more interesting. At the same time, exams are carried out through Google Forms and Quizizz, which allow for faster and more efficient assessment. Although there are obstacles, such as limited internet connection and differences in student abilities, the school always strives to provide the best facilities.

Informan 3	Digital learning is still combined with traditional methods, such as bookkeeping practices, to reduce plagiarism. The impact on student achievement still depends on individual awareness of utilizing technology appropriately, as it is a major factor in successful learning.
Informan 4	The use of technology allows students to more easily understand accounting concepts through clear visualization when the teacher displays the material using a projector. Challenges faced include unstable internet connection.
Informan 5	The use of technology in accounting learning is simpler, which helps students understand accounting concepts. Constraints that are often encountered include slow internet connections and the introduction of new menus in the application.

Research at SMK Negeri 3 Surakarta shows that the use of platforms such as Google Classroom, MYOB and Accurate accounting applications, facilities provided by the school, has improved the overall learning process. Students find it easier to access materials widely and adapt to new technologies as they were born in the digital era. Unstable connection is one of the challenges faced by the school. Guidance and supervision from teachers are still needed to ensure that the use of technology supports the learning process. Thus, technology can help students understand accounting concepts better and can improve their overall achievement.

4.1.3. SMK Negeri 6 Surakarta

Data obtained through interviews and observations at SMK Negeri 6 Surakarta are presented in the following table:

Table.3. Results of Interviews and Observations at SMKN 6 Surakarta

Source	Results of Interview and Observation
Informan 1	Applications such as Quizizz and Spreadsheet are integrated into accounting learning, with a gradual transition to help students and teachers adapt. Digital learning reduces physical meetings, yet supports various learning styles. Teachers aged 50 and above face the challenge of longer adaptation.
Informan 2	Digital learning, such as MYOB, Accurate, and Zahir, encourages students to interact more actively with teachers. Although achievement increases due to access to information, success still depends on utilizing technology wisely. Obstacles encountered include computer errors and the time needed to design case studies.
Informan 3	The effectiveness of digital learning can be seen in the improved achievement of students who can access materials without relying on physical textbooks as a response to the demands of the modern curriculum. Despite constraints on eye health and teachers' adaptation to technology, the school regularly holds workshops on the use of digital learning media.
Informan 4	The use of Excel, MYOB, Accurate, and Zahir makes the learning process more efficient. Students are more adaptable due to the support of school facilities and guidance from teachers. Challenges faced include internet connection and the need to memorize application menus.
Informan 5	The use of Excel, MYOB, Accurate, and Zahir facilitates understanding of the material and accelerates the learning process. Students are more active due to computer lab facilities and teachers who are open to questions. Obstacles faced include internet connection and introduction of application menus.

The results of research at SMK Negeri 6 Surakarta show that the use of various platforms such as Edmodo, Quizizz, Google Classroom and accounting applications such as MYOB, Accurate, and Zahir have been integrated into learning. Teachers act as facilitators who guide with the help of technology, so that students can learn more efficiently and effectively. Students are more adaptable to technology than teachers, especially teachers over 50 years old who need additional training to keep up with technological developments. Challenges faced by students and teachers include slow computers and eye health.

4.2. Discussion

In learning accounting at SMK Negeri 1 Surakarta, SMK Negeri 3 Surakarta, and SMK Negeri 6 Surakarta, the use of technology is an integral part. Since the COVID-19 pandemic, the application of digital technology has become an urgent need to support the distance learning process. This transformation is not only adaptive to current conditions, but also a foundation for building more modern and efficient learning methods. The dynamics of accounting practices and technological developments continue to move forward, which requires effective integration of technology in the learning process. Schools have invested heavily in technology infrastructure, including providing projectors, LCDs, computer labs and internet access. According to [Lohr et al. \(2024\)](#), the role of schools in supporting technology integration and providing fast internet access contributes significantly and positively to the success of interactive digital learning. Platforms such as Google Classroom, Quizizz, and Google Forms are used to support more effective learning. Materials are presented more engagingly through PowerPoint and Canva, which allow students to interact actively with the materials.

Project-based learning programs such as simulations and hands-on practice using accounting applications such as MYOB, Accurate, Zahir, and Spreadsheet have provided real experiences relevant to the world of work. Through this approach, students are not only skilled at completing in-class assignments, but are also actively involved in practical activities outside of school. One concrete example is the students' involvement in helping MSMEs prepare financial statements for capital loan applications to banks which not only broadens their horizons on practical accounting but also provides a real impact to the community. This collaborative approach not only increases student engagement in the learning process, but also builds communication and teamwork skills. In addition, according to [Dias-Oliveira et al. \(2024\)](#) project-based assignments provide opportunities to collaborate with companies, through internship activities, field studies, thus equipping students with real work experience relevant to the future world of work. With hands-on experience and application of technology, these activities successfully link theoretical learning with practical needs that can prepare students to face future professional challenges with confidence.

The results of interviews and observations conducted at SMK Surakarta revealed that the implementation of digital technology in accounting learning has had a significant impact. The use of several accounting platforms and applications has improved the interaction between students and teachers. The school's facilities also contribute to the effectiveness of digital-based learning. Nevertheless, the school still faces some obstacles. Overall, the application of technology in accounting learning can improve students' understanding of accounting materials. Students show progress in technology usage skills along with the training provided. With digital technology, students not only gain theoretical knowledge, but also practical skills needed in the world of work.

The transition to digital learning requires a clear approach from teachers, including the delivery of steps that are easy for students to understand. Both students and teachers can adapt relatively easily, thanks to the rapid development of technology in the modern era. Interactions

between students and teachers have also changed. While traditional methods focused more on lectures, many students are now more likely to use digital devices during learning. Although digital learning reduces the frequency of physical meetings, students prefer to learn digitally because of the flexibility it offers. Through digital, students can learn anywhere and anytime without being limited by place and time, allowing them to access materials flexibly (Sari, 2019). From the results of research Utama et al. (2017), students who have a high level of learning independence will realize that the material being studied has benefits so that they continue to play an active role in the learning process.

Through technology, students have the freedom to choose learning materials that suit each student's learning style, allowing them to be more comfortable and effective in understanding accounting materials. Students who are independent in the use of technology need to be equipped with adequate skills and knowledge to explore the digital world with a sense of responsibility, as expressed by (Almethen & Alomair, 2024). Interestingly, students show remarkable digital capabilities, often even more skilful than teachers in using applications. This reflects the needs of today's generation who are increasingly familiar with technology. However, the development of these skills must be balanced with an increase in the quality of teachers in order to design learning that utilizes technological advances (Susilo & SU, 2021). Although learning is already digital-based, some teachers still combine it with manual note taking as a step to minimize plagiarism and allow teachers to monitor students' understanding process more accurately.

The application of technology in accounting learning also brings positive impacts, especially in increasing students' participation in class and students' understanding of financial statements. These conditions open up opportunities for discussions with time flexibility and change the learning approach that previously focused on the teacher to be more student focused (Khikmawati et al., 2021). Al Shloul et al. (2024) revealed that students participate more actively in learning and are able to remember the material well when the learning resources provided match the needs and interests of students. Although initially there were complaints about the change in learning methods, over time, students began to feel challenged and motivated to develop their abilities, especially in using technology. Technology also encourages students to understand accounting concepts more deeply through practical simulations and visualizations. Full support from teachers through hands-on guidance during the learning process is an important factor in students' success in understanding accounting concepts more easily.

With technology in place, student achievement shows significant improvement. The transition from traditional to digital methods had a real positive impact on student's academic results, with improvements in both theoretical understanding and technological skills. The continued use of accounting software honed from the beginning to advanced classes showed consistent progression. Technology provides greater access to information, learning resources and materials, creating a more interactive and engaging learning experience (Al-Ghatrifi et al., 2023). Teachers play an important role in ensuring students not only access information correctly, but also understand and integrate the material they learn appropriately. This is in line with previous research, which shows that the role of teachers is very influential on students' academic success (Bardach & Klassen, 2020).

The application of technology in accounting learning faces several obstacles that need to be considered to ensure the learning process runs optimally. Technical problems such as errors on computers and unstable internet connections, especially when many students access the material, often hinder the smooth running of learning. In addition, material design and case study design require more accuracy and time. Eye health is also a concern, especially for teachers over the age

of 50 who are more vulnerable due to prolonged exposure to digital devices. Misuse of technology often leads students to focus more on non educational activities, and students' less supportive mobile devices, such as limited storage capacity, add to the complexity of the situation. Power disruptions such as blackouts can hinder the learning process, especially when students are working on computer-based assignments. The solution used is to temporarily switch to prepared manual practice as a measure to maintain the productivity of learning time. Adaptation to new applications is also a challenge, where students and teachers need to learn new features. However, with proper training and repeated use, students will become more accustomed to the technology.

Some teachers expect all parties, both teachers and students, to have a strong commitment to the importance of digital transformation in learning. To support this, regular training or relevant workshops in accordance with their respective fields are needed so that teachers can utilize technology more effectively and keep up with the times. Training should also involve students, so that they can raise awareness in using technology appropriately, productively and responsibly. In addition, adequate facility support is an important need to ensure the smoothness of the digital-based accounting learning process. A clearer and more structured curriculum update is also needed to overcome the confusion that still exists in its implementation. Technical constraints, such as blackouts, are of particular concern and solutions, such as the provision of backup resources, are expected to be implemented to maintain the continuity of the learning process. With this collaborative effort, digital transformation in accounting learning is expected to run more optimally and provide maximum benefits for all students.

5. Conclusion

The transformation of accounting learning from traditional to digital methods shows positive results, especially in improving student learning achievement. With wider access to information and learning resources, students can learn independently and be more actively involved in the learning process. The use of digital technology, such as accounting platforms and applications, allows students to access materials flexibly. The interactive and engaging learning experience has encouraged students to collaborate and discuss, thus deepening their understanding of accounting concepts. Despite some technical constraints, such as unstable internet connections and eye health issues, support from teachers remains a major factor in ensuring learning effectiveness. Proper supervision from teachers helps students utilize technology correctly and effectively. With adequate infrastructure and training for teachers and students, digital transformation in accounting learning is expected to continue to grow and have a positive impact on the quality of education.

6. References

- Aditya, R. Q., & Suranto. (2024). The Role of Educational Transformation in the Digital Era in Improving Student Quality. *Al Qalam: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan*. 18(3), 1756–1772. <https://doi.org/10.35931/aq.v18i3.3301>
- Al-Hattami, H. M. (2023). Understanding perceptions of academics toward technology acceptance in accounting education. *Heliyon*, 9(1), 2–11. <https://doi.org/10.1016/j.heliyon.2023.e13141>

- Al-Ghatrifi, M. O. M., Al Amairi, J. S. S., & Thottoli, M. M. (2023). Surfing the technology wave: An international perspective on enhancing teaching and learning in accounting. *Computers and Education: Artificial Intelligence*, 4(June), 100144. <https://doi.org/10.1016/j.caeai.2023.100144>
- Al-Shloul, T., Mazhar, T., Abbas, Q., Iqbal, M., Ghadi, Y. Y., Shahzad, T., Mallek, F., & Hamam, H. (2024). Role of activity-based learning and ChatGPT on students' performance in education. *Computers and Education: Artificial Intelligence*, 6(August 2023), 100219. <https://doi.org/10.1016/j.caeai.2024.100219>
- Almethen, A. A., & Alomair, M. A. (2024). The role of age, grade level, and subject area in determining the inclusion of digital citizenship elements in elementary school curricula: *Perspectives of teachers in the Kingdom of Saudi Arabia*. *Heliyon*, 10(14), e34597. <https://doi.org/10.1016/j.heliyon.2024.e34597>
- Amelia, N. P., Sabila, I., & Asbari, M. (2022). Pancasila as a Paradigm of Science and Technology. *Journal of Information Systems and Management (JISMA)*, 01(02), 1–6. <https://jisma.org/index.php/jisma/article/view/8>
- Anggito, A., & Setiawan, J. (2018). *Metodologi penelitian kualitatif*. Books Google. https://books.google.co.id/books/about/Metodologi_penelitian_kualitatif.html?id=59V8DwAAQBAJ&redir_esc=y
- Bardach, L., & Klassen, R. M. (2020). Smart teachers, successful students? A systematic review of the literature on teachers' cognitive abilities and teacher effectiveness. *Educational Research Review*, 30(June 2019), 100312. <https://doi.org/10.1016/j.edurev.2020.100312>
- Beardsley, M., Albó, L., Aragón, P., & Hernández-Leo, D. (2021). Emergency education effects on teacher abilities and motivation to use digital technologies. *British Journal of Educational Technology*, 52(4), 1455–1477. <https://doi.org/10.1111/bjet.13101>
- Bygstad, B., Øvrelid, E., Ludvigsen, S., & Dæhlen, M. (2022). From dual digitalization to digital learning space: Exploring the digital transformation of higher education. *Computers and Education*, 182(February), 2–11. <https://doi.org/10.1016/j.compedu.2022.104463>
- Damayanti Peoni, M. R., & Tungka, N. F. (2022). Junior High School Students' Digital Literacy Level During Learning in Pandemic Time. *Proceeding of Undergraduate Conference on Literature, Linguistic, and Cultural Studies*, 1(January). <https://doi.org/10.30996/uncolles.v1i.1370>
- Dias-Oliveira, E., Pasion, R., Vieira da Cunha, R., & Lima Coelho, S. (2024). The development of critical thinking, team working, and communication skills in a business school—A project-based learning approach. *Thinking Skills and Creativity*, 54(June 2023), 101680. <https://doi.org/10.1016/j.tsc.2024.101680>
- Gizaw, M. E., & Tessema, G. W. (2020). Role of information and communication technologies in educational systems: a systematic review. *International Journal of Scientific Reports*, 6(7), 277. <https://doi.org/10.18203/issn.2454-2156.intjsci.20202644>

- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3(May), 275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>
- Iivari, N., Sharma, S., & Ventä-Olkkonen, L. (2020). Digital transformation of everyday life – How COVID-19 pandemic transformed the basic education of the young generation and why information management research should care? *International Journal of Information Management*, 55(June), 2–6. <https://doi.org/10.1016/j.ijinfomgt.2020.102183>
- Khikmawati, D. K., Alfian, R., Nugroho, A. A., Susilo, A., Rusnoto, R., & Cholifah, N. (2021). Pemanfaatan E-book untuk Meningkatkan Minat Belajar Siswa Sekolah Dasar di Kudus. *Buletin KKN Pendidikan*, 3(1), 74–82. <https://doi.org/10.23917/bkkndik.v3i1.14671>
- Lohr, A., Sailer, M., Stadler, M., & Fischer, F. (2024). Digital learning in schools: Which skills do teachers need, and who should bring their own devices? *Teaching and Teacher Education*, 152(July), 104788. <https://doi.org/10.1016/j.tate.2024.104788>
- Manca, S., Raffaghelli, J. E., & Sangrà, A. (2023). A learning ecology-based approach for enhancing Digital Holocaust Memory in European cultural heritage education. *Heliyon*, 9(9), 2–13. <https://doi.org/10.1016/j.heliyon.2023.e19286>
- McCarthy, A. M., Maor, D., McConney, A., & Cavanaugh, C. (2023). Digital transformation in education: Critical components for leaders of system change. *Social Sciences and Humanities Open*, 8(1), 2–15. <https://doi.org/10.1016/j.ssaho.2023.100479>
- Nkomo, L. M., Daniel, B. K., & Butson, R. J. (2021). Synthesis of student engagement with digital technologies: a systematic review of the literature. *International Journal of Educational Technology in Higher Education*, 18(1), 34. <https://doi.org/10.1186/s41239-021-00270-1>
- Ruzanova, L. S., Karnaukhova, T. V., Fakhrudanova, I. B., & Titova, M. A. (2022). The use of digital technologies in the organization of higher and additional education classes. *Bulletin of the Karaganda University. Pedagogy Series*, 105(1), 75–82. <https://doi.org/10.31489/2022ped1/75-82>
- Sari, D. E. (2019). Quizlet: Aplikasi Pembelajaran Berbasis Smartphone Era Generasi Milenial. *Jurnal Pendidikan Ilmu Sosial*, 29(1), 9–15. <https://doi.org/10.23917/jpis.v29i1.8150>
- Smith, R. C., Schaper, M. M., Tamashiro, M. A., Van Mechelen, M., Petersen, M. G., & Iversen, O. S. (2023). A research agenda for computational empowerment for emerging technology education. *International Journal of Child-Computer Interaction*, 38(October), 2–14. <https://doi.org/10.1016/j.ijcci.2023.100616>
- Solovei, V., Horban, Y., Samborska, O., Yarova, I., & Melnychenko, I. (2023). Digital transformation of education in the context of the realities of the information society: problems, prospects. *Eduweb*, 17(2), 225–233. <https://doi.org/10.46502/issn.1856-7576/2023.17.02.19>

- Stoyanova, T., Stoyanov, P., & Sofia, U. (2024). The Digitization of Higher Education Institutions - A Factor for their Competitiveness in the Market of Educational Services. *The Future of Education 14th Edition 2024*. 2–7.
- Susilo, A., & SU, H. (2021). Pengembangan E-Modul Akuntansi Kontekstual Berbasis Proyek Untuk Meningkatkan Kemampuan Aplikatif Siswa Generasi Z. *Jurnal VARIDIKA*, 33(1), 99–107. <https://doi.org/10.23917/varidika.v33i1.15308>
- Sutama, S., Wahyudiyanto, E., & Narimo, S. (2017). Dampak Motivasi Berprestasi terhadap Kemandirian Belajar Matematika di Sekolah Menengah Pertama. *Manajemen Pendidikan*, 12(3), 191–200. <https://doi.org/10.23917/jmp.v12i3.5521>
- Toquero, C. M. (2020). Challenges and Opportunities for Higher Education amid the COVID-19 Pandemic: The Philippine Context. *Pedagogical Research*, 5(4), 2–5. <https://doi.org/10.29333/pr/7947>
- Tsarapkina, J. M., Anisimova, A. V., Gadzhimetova, B. D., Kireychева, A. M., & Mironov, A. G. (2021). The impact of digital education transformation on technical college teachers. *Journal of Physics: Conference Series*, 2001, 1–6. <https://doi.org/10.1088/1742-6596/2001/1/012030>
- Ufua, D. E., Emielu, E. T., Olujobi, O. J., Lakhani, F., Borishade, T. T., Ibidunni, A. S., & Osabuohien, E. S. (2021). Digital transformation: A conceptual framing for attaining Sustainable Development Goals 4 and 9 in Nigeria. *Journal of Management and Organization*, 27(5), 836–849. <https://doi.org/10.1017/jmo.2021.45>
- Wang, K., Li, B., Tian, T., Zakuan, N., & Rani, P. (2023). Evaluate the drivers for digital transformation in higher education institutions in the era of industry 4.0 based on decision-making method. *Journal of Innovation and Knowledge*, 8(3), 2–12. <https://doi.org/10.1016/j.jik.2023.100364>