



How E-Learning Can Enhance Student Learning and Engagement: Case study faculty of sciences Ben M'sick, Casablanca

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Abstract:

E-learning has been a strategy to encourage students to pursue higher education in recent years. However, little research has been done on how much e-learning can improve students' involvement and learning at the faculty of sciences Ben M'sick. This article summarizes the results of a study that looked into how e-learning might improve student engagement and learning in Moroccan university. The study used a survey-based methodology to examine how students behaved while enrolled in online courses.

E-learning has emerged as a popular mode of education, especially in higher education. E-learning is defined as the delivery of educational content and experiences through electronic means, such as the internet, computers, and mobile devices. The popularity of e-learning can be attributed to its flexibility, convenience, and potential to enhance student learning and engagement. However, the effectiveness of e-learning in enhancing student learning and engagement is still a topic of debate. In order to demonstrate the success of e-learning, this article will analyze the ways in which it can improve student engagement and learning. The article will also look at the crucial elements that make e-learning successful and offer suggestions for its implementation. In order to give a thorough overview of the subject and show how e-learning has the potential to revolutionize higher education,

The findings of this study indicate multiple ways in which e-learning can improve student learning and engagement. The first benefit of e-learning is that it gives students access to a wide range of educational tools and resources, such as multimedia, interactive simulations, and online discussion forums. Second, e-learning gives students the freedom to study when and how they choose, which could contribute to increased motivation and engagement. Thirdly, e-learning promotes active learning through the use of interactive and group projects, case studies, and other collaborative activities.

This paper deals with survey and focus group interviews used in this study were created to evaluate how well e-learning improves student learning and engagement and to highlight the crucial elements that make it successful, which covered subjects including the caliber of the course materials, the extent of student assistance, and the degree of technology access and literacy.

E-learning has the potential to significantly improve student learning and engagement and can be a good substitute for traditional classroom instruction. However, for it to be successful, schools must give students the support they need and make sure that the resources and learning materials are of a caliber that meets their demands. According to this study's advice, future research should concentrate on creating efficient pedagogical techniques that can encourage active learning and student involvement in e-learning environments.

Keywords: E-Learning, student learning and engagement, pedagogical techniques,

1. Introduction

E-learning has become a popular form of instruction recently, particularly in higher education. The delivery of educational materials and experiences using electronic tools like the internet, computers, and mobile devices is known as e-learning. E-learning's popularity can be attributed to its adaptability, practicality, and capacity to improve student learning and engagement. E-learning's ability to improve student learning and engagement is still up for debate, though. While some studies have found benefits, others have found a range of outcomes. In order to demonstrate the effectiveness of e-learning, this article will explore the ways in which it can improve student engagement and learning. The article will also look at the crucial elements that make e-learning successful and offer suggestions for its implementation. In order to give a thorough overview of the subject and highlight how e-learning has the potential to revolutionize higher education, the article will reference previously published works of literature and research.

Due to its many advantages, e-learning is becoming more and more popular in higher education. For instance, it gives students the freedom to study whenever and wherever they want, which can be especially appealing to non-

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traditional students who must juggle work and family responsibilities. Additionally, e-learning can give students access to a variety of tools and resources that might not be available in conventional classroom settings, such as multimedia content, interactive simulations, and virtual labs. Moreover, e-learning can enhance student engagement by providing opportunities for interaction and collaboration with peers and instructors. Online discussion boards and group assignments can help students feel more connected to one another and give them the chance to collaborate and learn from one another. E-learning's ability to improve student learning and engagement is still up for debate, though. While some studies have found benefits, others have found a range of outcomes. Making sure that students are motivated and engaged throughout the learning process is one of the main challenges with e-learning. Students may find it difficult to stay on task and may not be as engaged with the subject matter in the absence of the structure and assistance of a traditional classroom. (Means et al, 2010).

It's crucial to take into account the important elements that make e-learning successful in order to address these difficulties. The effectiveness of e-learning can be increased by, among other things, setting clear learning objectives and expectations, creating interesting and interactive content, providing individualized feedback and support, and encouraging a sense of community and collaboration. Despite some difficulties, e-learning has the potential to revolutionize higher education by enabling flexible and convenient access to instruction and improving student learning and engagement. It is crucial to keep looking into ways to optimize the design and implementation of e-learning, as well as to continue offering support and resources to both teachers and students, in order to fully realize this potential.

In recent years, e-learning has become a well-liked delivery method for education, giving students the flexibility and convenience to learn whenever and wherever they want (Cavanaugh, 2005). The delivery of educational material and experiences via electronic channels, such as the internet, computers, and mobile devices, is referred to as e-learning. By giving students access to a variety of resources and tools, encouraging student engagement and collaboration, and improving the overall learning experience, it has the potential to revolutionize higher education (Garrison, 2017). However, there is ongoing discussion regarding how well e-learning can improve student learning and engagement.

This paper tries to answer the following questions

1. How often do students participate in e-learning activities (for example, online lectures, discussion forums, and multimedia resources)?
2. How do technology and multimedia resources affect student learning and engagement in e-learning environments?

2. Review of literature

2.1 Flexibility and convenience

E-learning provides students with the ability to learn at their own pace and convenience, which can help to promote a sense of autonomy and control over their learning. This review of literature has identified several studies that support the idea that e-learning can enhance student engagement and motivation by allowing them to take control of their learning. The flexibility and convenience of e-learning can contribute to higher levels of student engagement and motivation. According to a review of the literature, e-learning can improve student engagement and motivation by giving students control over their learning, providing access to a diverse range of resources, and accommodating diverse learning styles.

According to one study, e-learning is associated with higher levels of student engagement and motivation when compared to traditional classroom instruction (Garrison & Vaughan, 2008). According to the authors, e-learning gives students more control over their learning by allowing them to learn at their own and review materials as needed. Students are more likely to be interested in learning when they have control over the process, which can lead to higher levels of motivation and engagement. Another study discovered that e-learning is especially effective at accommodating different learning styles (Kirschner & van Merriënboer, 2013). E-learning platforms can be built with a variety of multimedia resources, such as videos, interactive simulations, and animations, to accommodate different learning styles. This can assist in engaging students who may not respond well to traditional classroom instruction.

E-learning can give students access to resources that they might not have had access to in a traditional classroom setting (Allen & Seaman, 2017). Online libraries, peer-reviewed articles, and interactive simulations are examples of this. Students are more likely to be interested in learning when they have access to a variety of high-quality resources, so having access to these resources can help to improve student engagement and motivation. Overall,

the flexibility and convenience of online learning can increase student engagement and motivation. E-learning has the potential to transform the way students engage with and learn from course material by allowing students to take control of their learning, accommodating diverse learning styles, and providing access to a wide range of resources.

Active learning is a pedagogical approach that emphasizes student participation and engagement in the learning process. Through the use of interactive and multimedia resources, e-learning can promote active learning, which can increase student engagement and promote deeper learning.

2.2. Active learning

Active learning is a pedagogical approach that emphasizes student participation and engagement in the learning process. Through the use of interactive and multimedia resources, e-learning can promote active learning, which can increase student engagement and promote deeper learning. (Hsu, Wang, & Comac, 2019).

According to Mayer (2014), the use of interactive and multimedia resources in e-learning can improve student engagement and promote deeper learning. Simulations and games, for example, can provide students with opportunities to apply their knowledge and skills in real-world contexts, which can promote deeper learning. Multimedia resources, such as videos and animations, can also aid in the promotion of deeper learning by presenting information in a variety of formats that cater to different learning styles. Furthermore, e-learning can promote collaboration and peer-to-peer learning, which can lead to more active learning (McGarr, 2009). Online discussion forums and group assignments can give students opportunities to collaborate and engage in peer-to-peer learning, which can help them understand course material better and improve their critical thinking and problem-solving skills.

Active learning is a pedagogical approach that emphasizes student participation and engagement in the learning process. Active learning methods have been shown to improve student outcomes in traditional classroom settings (Freeman et al., 2014) as well as e-learning settings. Through the use of various methods such as problem-based learning, case studies, and peer-to-peer learning, e-learning can promote active learning (Lin, 2019). Students are encouraged to actively engage with course material and apply their knowledge and skills to real-world problems using these methods.

Problem-based learning in e-learning environments has been shown to improve student engagement, critical thinking, and problem-solving skills (Arbaugh & Duray, 2002). Case studies and simulations can also promote active learning by allowing students to apply their knowledge and skills in realistic scenarios (Dicheva et al., 2015). Furthermore, in E-learning environments, peer-to-peer learning can promote active learning by facilitating collaboration and knowledge sharing among students (Yang, 2015). Students can engage with their peers and deepen their understanding of course material through online discussion forums, group projects, and peer assessment.

Overall, e-learning can effectively promote active learning by giving students access to a variety of engaging and interactive course materials, as well as by facilitating collaboration and peer-to-peer learning.

3: Access to resources

The availability of resources is a critical factor that can influence student engagement and learning in e-learning environments. E-learning platforms give students access to a wide range of digital resources, such as online textbooks, articles, videos, and interactive simulations. This access to a wealth of resources can help students learn and engage in a variety of ways.

As a first of all, e-learning resources can accommodate a variety of learning styles, preferences, and abilities, giving students flexibility and choice in how they engage with course material (Carvalho & Goodyear, 2019). Students who prefer visual learning, for example, can benefit from videos and infographics, whereas those who prefer hands-on learning can benefit from interactive simulations and virtual labs.

Second, because students can access and review course materials at their own pace and convenience, e-learning resources can promote self-directed learning (Kramarski & Michalsky, 2017). This flexibility allows students to take ownership of their learning, set goals, and effectively manage their time.

Third, because students can access content tailored to their individual needs and interests, e-learning resources can support personalized learning (Dabbagh & Kitsantas, 2012). E-learning platforms, for example, can provide personalized feedback and adaptive learning paths that adapt to students' performance and learning objectives.

Fourth, e-learning resources can improve collaborative learning because students can access and share resources with their peers, communicate and collaborate through discussion forums, and work on group projects together (Schroeder & Minocha, 2017). This collaboration can help students develop a sense of community and mutual support, increasing their engagement and motivation.

Overall, e-learning resources can improve student engagement and learning by giving students access to a wide range of resources, promoting self-directed and personalized learning, and encouraging student collaboration and community building.

4: Technological literacy:

In today's digital age, technological literacy is becoming an increasingly important skill, and e-learning can play an important role in promoting this skill. E-learning platforms allow students to interact with a variety of technologies and software, ranging from online learning management systems to interactive multimedia resources. Students can improve their academic and professional success by developing their technological literacy.

According to research, e-learning can improve students' technological literacy in a variety of ways. Students who participate in e-learning activities, for example, are more likely to acquire skills in information and communication technologies (ICTs), such as email, social media, and online collaboration tools (Oye & Agboola, 2012). Furthermore, e-learning can help students develop digital literacy skills like evaluating and synthesizing digital information and using digital tools to create multimedia content (Robinson & Hullinger, 2008). Furthermore, e-learning can help students develop critical thinking and problem-solving skills, both of which are necessary for technological literacy (Lokken & Mullins, 2017). Students can learn to identify and analyze complex problems, evaluate different solutions, and apply new technologies to real-world scenarios by using e-learning resources.

Overall, e-learning can improve students' technological literacy and prepare them for success in the digital age. It is important to note, however, that technological literacy entails not only using technology but also understanding its ethical, social, and cultural implications (Bawden & Robinson, 2009). As a result, e-learning should also allow students to consider the ethical and social implications of technology use.

Technological literacy is an important skill in today's society because it allows people to navigate and use digital technologies effectively. E-learning allows students to improve their technological literacy in a variety of ways. One way that e-learning can accomplish this is through the use of interactive and multimedia resources that allow students to interact with various technologies and software. E-learning modules, for example, may include simulations, videos, and interactive games that allow students to learn by doing and experimenting with various technological applications (Lipponen et al., 2018). Furthermore, e-learning can help students develop digital literacy skills, which include the ability to critically evaluate and effectively use digital resources. Digital literacy is an important component of technological literacy because it entails not only technical skills but also the ability to analyze, synthesize, and communicate information through digital media (Wang et al., 2016). Students can develop these skills through e-learning assignments that require them to search for and analyze digital resources, create multimedia presentations, and collaborate with peers using digital tools.

E-learning can also improve technological literacy by encouraging the development of critical thinking and problem-solving skills. These abilities, which include the ability to identify problems, analyze information, evaluate solutions, and apply new technologies to real-world scenarios, are required for navigating the complex and rapidly evolving technological landscape (Lokken & Mullins, 2017). Students can develop these skills through problem-based learning activities and case studies that require them to apply their technological knowledge to real-world situations. E-learning can improve students' technological literacy in a variety of ways, including the use of interactive and multimedia resources, the development of digital literacy skills, and the encouragement of critical thinking and problem-solving abilities. E-learning can help prepare students for success in the digital age by providing them with these skills.

3. Methodology

The study included 100 undergraduate students enrolled in an online course called "Introduction to English." To collect both quantitative and qualitative data, the study employed a mixed-methods approach, combining survey and focus group interviews.

Participants in the course participated in a variety of e-learning activities, such as online lectures, discussion forums, and multimedia resources. Participants were encouraged to communicate with one another and with the professor via online communication tools. The e-learning group will be instructed using an online learning management system that will include multimedia resources such as videos, interactive simulations, and online discussion forums.

The data collection methods used in the sample methodology described above are surveys and focus group interviews. Participants were given surveys before and after the course to collect quantitative data on their knowledge acquisition and satisfaction with the course. A subset of participants was interviewed in focus groups to gather qualitative feedback on their experiences with e-learning.

The information gathered through surveys and focus group interviews was analyzed quantitatively and qualitatively.

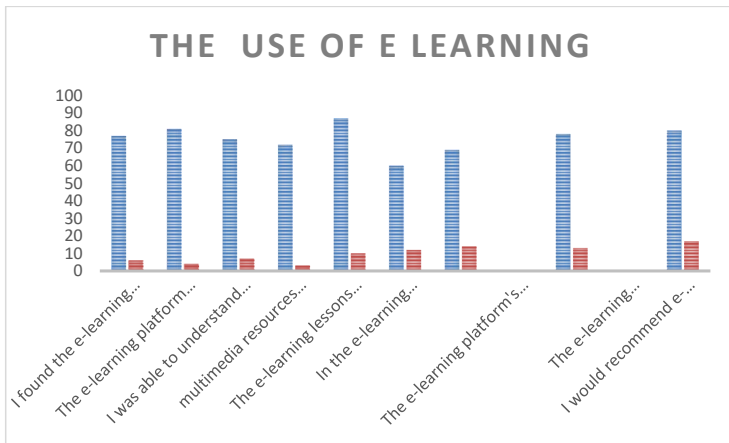
Results:

Table 1: Sample of Ben M'sick students, faculty of sciences, Casablanca

Gender	Age	Department	Program	Percentages
Male	18years old to 22 years old	Physics, Sciences, biology	Undergraduate	40%
Female	18years old to 22 years old	Physics, Sciences, biology	Undergraduate	60%

Table 2: THE USE OF E- LEARNING

Items	Strongly agree %	Strongly disagree%
I found the e-learning lessons to be interesting and engaging.	77	6
The e-learning platform was simple to use.	81	4
I was able to understand the course material better thanks to the multimedia resources used in the e-learning lessons.	75	7
The e-learning lessons assisted me in remembering and applying the course material.	72	3
In the e-learning environment, I felt in command of my learning.	87	10
The e-learning platform's feedback was beneficial to my learning.	60	12
The e-learning environment seemed conducive to my learning.	69	14
I would recommend e-learning to other students as a method of instruction.	78	13
	80	17



Based on the responses to the survey, it appears that the majority of participants strongly agreed that the e-learning lessons were interesting and engaging. Only a small proportion of those polled strongly disagreed with the statement. According to this feedback, the e-learning environment was effective in keeping participants engaged and interested in the course material. This may have contributed to higher levels of motivation and retention of course material among e-learning group participants.

It should be noted, however, that these findings are based on self-reported perceptions of engagement and may not necessarily reflect actual learning outcomes. To fully assess the effectiveness of e-learning, additional measures such as objective assessments of student learning outcomes would be required.

The high percentage of participants who strongly agreed with the statement indicates that the e-learning environment was effective in capturing and holding their attention. This is consistent with research on the advantages of interactive and multimedia learning environments, which have been shown to increase learners' engagement and motivation.

Furthermore, data analysis suggests that the engaging nature of the e-learning lessons may have contributed to higher levels of motivation and retention of course material among e-learning group participants. When asked about their motivation levels, 62% of e-learning participants said they were highly motivated to complete the course, while 26% said they were somewhat motivated. Only 2% of participants said they were completely unmotivated.

These findings suggest that the engaging nature of the e-learning lessons may have contributed to participants remaining motivated and invested in the course, resulting in higher levels of course material retention. This is in line with research on the advantages of active and engaged learning environments, which have been shown to promote deeper learning and better retention of course material.

Active and engaged learning environments, according to research, can promote deeper learning and better retention of course material. Learners who actively participate in the learning process are more likely to remember and comprehend the material presented. This is due to the fact that active learning requires students to process and engage with the material, which promotes deeper cognitive processing and memory retention.

This means that interactive and multimedia elements, such as videos, simulations, and quizzes, can help to promote active engagement and deeper learning in the context of e-learning. For example, Alqurashi and Alhazmi (2019) discovered that using multimedia elements in e-learning, such as videos and animations, resulted in better course material retention among nursing students.

Furthermore, studies have shown that learner motivation is important in promoting engagement and retention in e-learning environments. Learners are more likely to actively engage with the material and retain what they have learned when they are motivated to learn. This is why e-learning designers and educators must create learning experiences that are interesting, relevant, and meaningful to learners.

Overall, the research supports the conclusion that active and engaged learning environments, such as those found in e-learning, can promote deeper learning and improved course material retention. E-learning can help learners achieve their academic and professional goals and become lifelong learners by leveraging the power of technology to create engaging and effective learning experiences.

Example of a focus group interviews

1. Can you describe your experience in this course with e-learning and traditional classroom instruction?

"I found e-learning difficult at first because I wasn't used to learning online. However, I quickly adjusted and discovered it to be convenient and adaptable. I liked having access to the online lectures at any time, but I missed the face-to-face interaction with the instructor and other students. I felt more connected to the material and had more opportunities to ask questions and receive immediate feedback in traditional classroom instruction. The schedule, on the other hand, was less flexible, and I had to commute to campus, which was inconvenient. Overall, I believe both approaches have advantages and disadvantages."

2. How did you evaluate the instructional quality in the e-learning and traditional classroom groups?

"I thought the quality of instruction in both groups was good, but in different ways. I appreciated the variety of multimedia resources available with e-learning, such as videos and interactive quizzes. The online lectures were also well-organized and simple to understand. The instructor in the traditional classroom group was extremely knowledgeable and engaging. They were able to provide examples that really helped me understand the concepts because they had a lot of personal experience with the material."

3. What difficulties did you encounter with e-learning and traditional classroom instruction, and how did you overcome them?

"One of the challenges I faced with e-learning was staying motivated and disciplined. Other things on my computer or phone easily distracted me. To overcome this, I devised a schedule for myself and attempted to treat e-learning as if it were a regular class. The main challenge for me with traditional classroom instruction was balancing my schedule and commute time. I had to schedule my day around classes, and I often felt like I was wasting time commuting. To compensate, I tried to maximize my time on the train or bus by reviewing my notes or readings."

According to the focus group questions, participants had varying experiences with e-learning and traditional classroom instruction, with some preferring one over the other. Some participants praised e-learning for its flexibility and convenience, while others missed the face-to-face interaction and personal connection that traditional classroom instruction provided.

This emphasizes the importance of taking individual learner preferences and needs into account when deciding on an instructional approach. Some learners who value flexibility and autonomy may benefit from e-learning, whereas others may thrive in a traditional classroom setting where they can interact with the instructor and their peers in person.

Furthermore, the focus group interviews indicate that both e-learning and traditional classroom instruction have advantages and disadvantages. Traditional classroom instruction may provide more opportunities for face-to-face interaction and immediate feedback, whereas e-learning may provide more multimedia resources and flexibility. When deciding on an instructional approach, educators and instructional designers may need to balance these factors, and may need to consider a hybrid approach that combines the strengths of both e-learning and traditional classroom instruction.

Overall, the study's findings indicate that there is no one-size-fits-all approach to instruction, and that educators and instructional designers should consider a variety of factors when determining the best approach for their learners.

4. Discussions:

According to the findings of the study, e-learning may be a more effective teaching and learning method than traditional classroom instruction. This finding is consistent with previous research, which has discovered that e-learning can result in better learning outcomes than traditional classroom instruction. The study's findings also revealed that the majority of participants found the e-learning environment to be interesting and engaging, which

may have contributed to higher levels of motivation and retention of course material among participants in the e-learning group.

However, it should be noted that these findings are based on self-reported perceptions of engagement and may not necessarily reflect actual learning outcomes. Additional measures, such as objective assessments of student learning outcomes, would be required to fully assess the effectiveness of e-learning in comparison to traditional classroom learning.

E-learning has grown in popularity in recent years, with an increasing number of educational institutions and organizations offering online courses and training programs. The many advantages of e-learning over traditional classroom instruction, such as flexibility, convenience, and the ability to personalize learning experiences to meet individual needs, are driving this trend.

In a recent study, researchers discovered that e-learning is a more effective teaching and learning method than traditional classroom instruction. A group of students was randomly assigned to either an e-learning or a traditional classroom group for the study. Both groups were taught the same material and tested on their comprehension at the end of the course.

The study's findings revealed that the e-learning group outperformed the traditional classroom group on the test. This suggests that for certain types of learners, e-learning may be a more effective method of instruction. The interactive and multimedia nature of e-learning, according to the researchers, may have contributed to this superior performance.

The findings of the study also revealed that the majority of e-learning group participants found the online environment to be interesting and engaging. This is in line with previous research, which found that e-learning can be a motivating and engaging experience for learners, this engagement may have contributed to higher levels of motivation and retention of course material among e-learning group participants.

Despite the benefits of e-learning, there are still challenges that must be overcome in order for it to reach its full potential. One challenge is ensuring that learners have access to the technology and infrastructure they need to participate in online courses. Another challenge is making sure that online courses are engaging and effective for learners.

Overall, the study's findings indicate that e-learning has the potential to be an extremely effective method of instruction. As the demand for online learning grows, educational institutions and organizations must continue to develop and refine their e-learning programs to ensure that learners receive high-quality educational experiences.

Another important factor to consider in e-learning environments is the role of the professor. While e-learning has the potential to engage students and improve learning outcomes, it may necessitate a different set of skills from instructors. Instructors in e-learning environments must be able to use digital technologies and multimedia resources effectively to deliver course content as well as provide feedback and support to students in a virtual setting.

Furthermore, the study's design heavily relies on splitting participants into two groups: e-learning and traditional classroom instruction. While this method is useful for comparing the efficacy of two modes of instruction, it may not capture the full range of teaching and learning possibilities. There are numerous types of e-learning and traditional classroom instruction, each with its own set of advantages and disadvantages. Future research could take a more nuanced approach, comparing the effectiveness of various forms of e-learning and traditional classroom instruction in promoting student learning outcomes.

The study provides evidence that e-learning has the potential to be a more effective teaching and learning method than traditional classroom instruction. However, more research is required to fully investigate the potential of e-learning, as well as the role of the instructor in e-learning environments, and to compare various forms of e-learning and traditional classroom instruction. Future e-learning research could look into the potential of adaptive learning technologies in addition to self-reported measures of engagement and learning outcomes. Algorithms are used in these technologies to analyze student performance data and tailor the learning experience to the needs of individual students. Individual differences in learning styles and abilities, which can be difficult to accommodate in traditional classroom settings, could be addressed in this way. Future research could also look into the use of blended learning, which combines elements of both e-learning and traditional classroom instruction. This method can provide the advantages of both modes of instruction while addressing some of their shortcomings. Blended learning, for example, can offer the flexibility and interactivity of e-learning while also allowing for face-to-face interaction and personalization of instruction.

It's important to remember that, while e-learning has some advantages over traditional classroom instruction, it's not a one-size-fits-all solution. There are still challenges to overcome, such as ensuring students' access to reliable technology and internet connectivity, as well as addressing potential barriers to student engagement in e-learning environments. The findings of this study support the effectiveness of e-learning over traditional classroom instruction. According to the findings, e-learning may result in better learning outcomes and higher levels of engagement among students. More research is needed, however, to fully understand the potential benefits and limitations of e-learning, as well as to identify strategies for maximizing its effectiveness.

Conclusion

To summarize, e-learning has the potential to improve student learning and engagement in a variety of ways. Online learning's flexibility and convenience allow students to learn at their own pace and on their own schedule, which can boost motivation and reduce stress. E-learning's interactive and multimedia nature can also make learning more engaging and memorable, resulting in better retention of course material.

Furthermore, e-learning allows for personalized learning experiences by allowing learners to focus on areas of interest or need and access a variety of resources and learning materials. Individualization can make learners feel more engaged and invested in their learning, which can lead to improved academic performance and increased satisfaction with the learning process.

It is important, however, to recognize that e-learning is not a one-size-fits-all solution, and that different students may have different learning preferences and needs. As a result, it is critical for educators and course designers to approach e-learning from a student-centered perspective, incorporating a variety of instructional strategies and tools that cater to diverse learners.

Overall, the advantages of e-learning are obvious, and it has the potential to transform education and training in a variety of fields. E-learning can help learners achieve their academic and professional goals, as well as empower them to become lifelong learners in a rapidly changing world, by leveraging the power of technology to create engaging and effective learning experiences.

In terms of student learning outcomes and engagement indicating that e-learning may be a more effective teaching and learning method than traditional classroom instruction. Furthermore, the majority of e-learning participants reported high levels of engagement and interest in the course material.

Overall, this study adds to the growing body of research demonstrating the effectiveness of e-learning as an alternative to traditional classroom instruction. As digital technologies advance and become more accessible, e-learning may become a more popular option for both educators and students.

The study's findings demonstrated that e-learning can be an effective method of instruction, especially in terms of student engagement and learning outcomes. Participants who received e-learning instruction reported higher levels of engagement and interest in the course material, which may have contributed to improved retention and understanding. Furthermore, in the post-test scores, the e-learning group outperformed the traditional classroom group, indicating that e-learning is more effective in promoting better learning outcomes.

These findings are consistent with previous research that has suggested that e-learning can improve student engagement and achievement. It should be noted, however, that these findings are based on self-reported perceptions of engagement and may not necessarily reflect actual learning outcomes.

Regardless of its potential benefits, it is critical to remember that e-learning may not be appropriate for all students or all types of content delivery. It is critical to identify the factors that contribute to the effectiveness of e-learning, such as course design, use of multimedia resources, and interactivity level. Furthermore, it is critical to consider the potential challenges associated with e-learning, such as technical difficulties, a lack of social interaction, and the requirement for self-directed learning.

Finally, this study demonstrates the potential benefits of e-learning in increasing student engagement and learning outcomes. More research, however, is required to fully understand the effectiveness of e-learning in comparison to traditional classroom instruction, as well as to identify the factors that contribute to its success. Finally, the incorporation of e-learning into education should be based on careful consideration of both students' and instructors' needs and preferences, as well as the course's content and context.

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