

SEMANTICALLY AWARE CONTENT-BASED E-LEARNING RECOMMENDATIONS: ENHANCING PERSONALIZED LEARNING EXPERIENCES

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Abstract

E-learning, or electronic learning, is a form of online education exclusively accessible via the internet. With internet connectivity, users can access e-learning materials from any location and at any time. Post-pandemic, e-learning has emerged as a favored mode of remote education, offering flexibility and accessibility to learners worldwide. Since the onset of Covid-19, e-learning has surged in popularity, becoming a preferred platform for educational endeavors. In qualitative research, questionnaires and interviews serve as primary data collection methods. Conducting interviews with individuals connected to the research topic is essential for gathering qualitative data effectively. The aim of this study is to identify the most widely used e-learning resources among students. The study's findings reveal a preference for video content among students utilizing e-learning platforms. Out of the 24 respondents surveyed, 14 (58.3%) reported choosing video-based learning as their preferred method, citing its effectiveness in facilitating comprehension. Utilizing video content in e-learning enhances students' understanding of the material, as indicated by the study's outcomes. To optimize the efficacy of e-learning video content, regular updates are crucial to sustain student engagement and ensure the content remains relevant and compelling.

Keywords: *Content-Based E-learning, learning experience, literacy, semantic.*

1. Introduction

E-learning also known as electronic learning is online learning that requires the internet to access it. E-learning can be accessed anywhere and at any time by users as long as there is internet to access it. The term E-Learning was introduced in 1988 and is described as a learning system that can be facilitated with technology or the internet, which is also known as electronic learning (Aulakh, Roul, and Kaushal 2023). E-learning has become a new aspect of learning (Mashroofa, et al. 2023) since COVID-19 in several countries. COVID-19 not only has an impact on health but also on education in various countries (Dehghan, et al. 2022) since COVID-19 in several countries. E-learning is becoming an important component of many higher education programs to increase knowledge and provide more prospects for qualified graduates (Mashroofa, et al. 2023).

The aim of creating E-Learning is to facilitate and make it easier for students and teachers in the learning process while COVID-19 is occurring. E-learning has become significant in formal and informal education, where technology is enhanced in students' learning environments to produce good learning outcomes (Lin, et al. 2023). Of course, learning using E-Learning has advantages and disadvantages when used by its users. One of the advantages of using E-Learning is that it can be used anywhere and at any time as long as the internet network is stable, and it can also make learning time flexible. The disadvantage of using E-Learning is that there is still a lack of understanding of how to use electronics when using E-Learning, many students and teachers still do not know how to use electronic devices.

E-learning can be influential because of the features it can offer such as strong learning possibilities through active participation, encouraging student-centered learning, and can also positively influence various aspects of learning (Amer, Al Musawi, and Muhammad 2022). The issue that this investigation can address is how to make learning substance utilizing e-learning to pull in more students' consideration and increment effectiveness in learning utilizing e-learning. E-learning will be able to be used more often in the future as an engaging learning tool. E-Learning can grow rapidly which has the potential to change education and the way learning is taught. The amount of content that can be accessed via E-Learning is also increasing, such as video and audio which contribute to a more interactive aspect. Therefore, E-Learning is considered a learning system that has the potential to develop rapidly in the future.

Research in adaptive learning shows that providing personalized Education content in E-Learning can be a promising alternative to conventional Education methods (Ezaldeen, et al. 2023). To make E-Learning more effective, more attention must be paid to creating interesting content that students will be interested in because this can help students to understand better the content of the learning that is used as that content. The appearance of E-Learning content must have interest and satisfaction for the user because it is essential in motivating students (Wagiran, et al. 2022). By developing high-quality E-Learning content, students' abilities and motivation can be significantly increased.

A comprehensive understanding of an e-content context should factor in several usability variables, such as e-learning functionalities (Zuanelli, 2013). E-learning content recommendations can influence the way the system handles models and an efficient system must use an easy approach and be supported by artificial intelligence. This can start from the role of students who can later support the creation of better E-Learning content. This research aims to make personalized E-Learning content easier for users to access. By creating content that is interesting and easy for students to understand, E-Learning can make learning easy and useful for its users.

2. Literature Review

2.1 Semantically aware content-based E-learning

The application of content in e-learning has increased rapidly over time, where e-learning content has become more diverse and interesting to use as electronic learning modules. For several years, e-learning content has been presented with various types of content sequentially on an electronic basis. Various combinations of deep learning and machine learning techniques can be utilized to overcome the challenges posed by the rapid development of scientific electronic content on the internet. However, integration for textual content awareness is still lacking, so efficient methods are needed (Ezaldeen,

et al. 2023). By choosing the right and efficient method, e-learning content can contain better and more varied results which can make it easier for users to access e-learning.

E-learning, a combination of education and technology, is a powerful learning tool, providing significant benefits by freeing interactions between learners and instructors from the constraints of time and location. During the outbreak of the COVID-19 pandemic, many primary and secondary schools have widely adopted e-learning as a means to ensure the continuity of education during temporary school closures (Dhawan, 2020). Various technology acceptance models are used to understand the perspective of students or users. Acceptance of the technology used can take the form of learning using electronics, which can be used anywhere and at any time. The content used is also varied, such as videos, articles, audio, and visual media used in learning.

With a variety of e-learning content, learning using e-learning can increase student satisfaction in their education. Increasing student satisfaction is an important investment in the future of higher education because it can improve quality and contribute to achieving its goals (Fatani, 2020). High satisfaction is a key indicator that most student learning needs have been met (Wagiran, et al. 2022). Student satisfaction can be a guide for education to meet students' learning needs. Satisfaction has an indirect impact on teaching and learning activities, meaning that both positive and negative results are greatly influenced by these factors.

Student satisfaction is determined by the quality of services provided by the university. Various aspects of services are considered important and are related to increasing student satisfaction as service users (Wagiran, et al. 2022). The importance of self-development as a service in increasing user satisfaction has been highlighted in many previous studies. Self-development includes improving skills that are considered important in helping students during the learning process. That way, the learning process can be further improved for personal skills.

2.2 Experiences of Using E-learning

The experience of using e-learning has made it easier to access learning materials flexibly. Students can study anytime and anywhere according to a predetermined schedule. Apart from that, e-learning also provides more active interaction with lecturers or instructors through online learning platforms. With e-learning, students feel more involved in the learning process and can take advantage of the various digital resources provided to improve their understanding. Apart from that, interactions with lecturers or instructors via online learning platforms also become more active.

Experience using e-learning can be used as a significant indicator of learning performance (Keskin and Yurdugül, 2022). E-learning offers significant opportunities for students to reach new levels of education that were previously inaccessible easily (Abuhassna, et al. 2022). E-learning changes the dynamics of interactions between instructors and students, requires students to have strong motivation and self-discipline, provides an avenue for students to express their creativity, has great potential for implementing new ideas and projects, and encourages personal growth and application of the principles of lifelong learning live (Anon, 2020). Because in learning using E-learning, motivators or teachers can combine learning using content and face-to-face. Successful implementation of e-learning requires the acquisition of specific characteristics and skills (Bismala, 2022).

3. Research Method

Qualitative research methodologies are employed in this study. A component of the process of creating knowledge through social interaction is qualitative research methodologies (Somantri, 2005). Observations, interviews, and document analysis are done to gather qualitative data for this study. Researchers can fully comprehend the research issue thanks to this methodology. Theory formulation or narrative description might result from data gathered in qualitative research.

Research is done using questionnaires or interviews as the research strategy. Conducting interviews with multiple people connected to the research topic is necessary for gathering data in qualitative interview research. The purpose of this study is to learn more about people's views, opinions, and experiences with educational materials. Qualitative interview-based research designs can provide research participants with a comprehensive grasp and expertise of the subject matter being studied. Additionally, this endeavor aims to foster student growth and inspiration for the research subject.

This research study involved participants from various educational institutions who utilized e-learning as part of their educational journey. For qualitative sampling, participants are interviewed to gather valuable information and insights. This data collection was carried out both online, via Google Forms, and offline or through interviews with individual participants. The purpose of this interview is to gain an understanding of the participants' experiences, points of view, and opinions related to the research topic.

Questionnaires and interviews were the main approaches used in this study to collect data. Closed-ended questions may be included in questionnaires, which are a crucial tool in the data collection process. The goal of this strategy is to gather quantifiable, tangible evidence that can be carefully examined to produce more significant conclusions. In addition to surveys, interviews will serve as the primary means of gathering data. Researchers will be able to speak with research participants face-to-face in this setting.

These face-to-face exchanges are important because they enable the researcher to learn more about the participants' viewpoints. This provides the researcher with an opportunity to delve deeper into the opinions and understandings of the participants regarding the research topic. This could offer a deeper comprehension of the research question, improving the study's overall caliber. Researchers will then be able to produce more pertinent e-learning content thanks to their comprehension of the performed interviews.

The material that has been analyzed will be methodically gathered and assigned for additional study by researchers. This is a crucial step in the procedure to guarantee that every piece of data is thoroughly examined. We plan to do a thorough and qualitative analysis in the future. Gaining a better grasp of instructors' perspectives on e-learning content that is presently being developed as well as their personal experiences was the aim of this investigation. The specific goal of this e-learning material is to raise student motivation, which is an important aspect of the learning process. The objective is to enhance students' educational experience, foster a more productive learning environment, and make the learning process more engaging for them.

4. Discussion

It was discovered that 24 respondents had answered the structured questionnaire issued via Google Forms for data gathering. To exclude inaccurate data that can affect

the outcomes of study data analysis, the collected data has already been validated. We watched the study participants as they described the characteristics of this research sample. This information was collected in a single, e-learning-focused class with one guy and twenty-three girls. We watched the study participants as they described the characteristics of this research sample.

Respondents were asked to describe their use of e-learning and the efficacy of the course materials they had obtained online. In addition, the respondents were asked what they thought about the ease of understanding e-learning information in comparison to more conventional teaching approaches. To better comprehend e-learning content in the context of this research, all of the respondents' responses were then examined. To guarantee that the study's findings were more pertinent and broadly applicable, the researchers made an effort to include a balanced sample of respondents. Thus, this research aims to offer important insights into the use of e-learning content in educational environments through meticulous data collecting and analysis.

Regarding whether e-learning content works better as teaching material, multiple answers were obtained from this research's data. The study's intriguing data shed light on how e-learning materials function within the educational process. In addition, it is intended that this study will support educators in selecting the most appropriate material to boost student learning outcomes.

Content of E-learning	Data (%)
Video	58,3%
Articles	29,2%
Modules	12,5%

4.1 Video

According to the data from a survey given to participants, 14 individuals (58.3%) said watching videos while learning made it easier for them to comprehend the e-learning material. There are several benefits of using video in e-learning materials that can improve the efficacy of learning. Increased attention is one benefit. Students can concentrate more on the lesson's material when they watch videos to learn. Pupils' interest might be piqued and their understanding of the information taught by the teacher enhanced by an engaging and well-structured video.

Students' knowledge is also enhanced by the visuals that are shown in the videos. Students will find it easier to follow and comprehend the course material when it is presented in visually appealing and clear ways. In addition, adding films to e-learning materials can enhance the learning experience's interest and enjoyment. Videos can offer an engaging, interactive learning environment where students can see and hear the teacher give explanations. Students can be more engaged and motivated to learn when they watch videos. When e-learning is combined with video-based learning materials, the user experience can be improved.

Easy access and flexibility are two other benefits of video in the context of distance learning. Depending on their needs, students have access to instructional films anywhere, at any time. This gives students freedom in scheduling their study time and lets them study at their own pace. Consequently, there are numerous benefits to adopting video as e-learning content, according to the survey results. Videos can improve comprehension of the subject matter, sharpen students' attention and enthusiasm in their studies, and add excitement and interactivity to the classroom setting.

4.2 Articles

According to the data from a survey given to participants, up to 7 (or 29.2%) of them said that using articles while studying makes it easier for them to understand the e-learning material. Respondents stated that learning through articles offers greater knowledge and analysis clarity for particular topics. Moreover, reading articles aloud can help pupils grasp the subject matter by offering additional instances and illustrations. As a result, learning and retention of the material are made easier for the students. Consequently, it can be said that teaching through articles is a useful way to improve students' literacy and comprehension of the article's subject matter.

4.3 Modules

According to the data of a survey given to participants, up to three individuals (12.5%) said that using modules during the learning process made it easier for them to understand the e-learning material. Respondents claimed that studying using modules could be simpler to read and comprehend. Learning with modules can expedite the learning process more than e-learning materials like movies. because learning content may be read and understood more easily through modules. They can control their study schedule and study independently thanks to the modules.

A few respondents also expressed the view that e-learning modules offer a chance to delve deeply into the subject matter. They can review the modules, make notes on important details, and concentrate more on the information included in them. This enhances knowledge comprehension and absorption. Thus, it can be said that there are numerous benefits to using modules in e-learning. As a result, it is advised that module usage in the context of e-learning be further enhanced.

5. Conclusion

E-learning, established in 1988, is a web-based learning platform accessible from any location at any time. Its significance as a communication medium was underscored during the COVID-19 pandemic (Uleanya and Naidoo, 2023). With its capacity to broaden students' knowledge and opportunities, e-learning has become integral to higher education, playing a pivotal role in both formal and informal learning settings, where technology enhances classroom outcomes. While navigating technology may pose challenges, its benefits—such as accessibility and flexibility—are contingent upon a reliable internet connection.

Notably, e-learning features like student-centered learning and active engagement positively impact various learning dimensions, transforming education through rapid expansion and making diverse content, including audio and video, more accessible. Research indicates that tailored educational content in e-learning can supplant traditional approaches, with a focus on producing engaging content to inspire students and boost their skills and motivation.

The study's findings revealed diverse perspectives among the 24 respondents, leading to the creation of three categories, one of which centered on relevant e-learning materials— instructional modules, articles, and videos. Among the respondents surveyed, 14 (or 58.3%) found video-based learning more effective within the e-learning environment. Students engaging with instructional videos exhibit heightened attention and retention, as visual imagery aids comprehension, making course material more accessible and enjoyable.

The consensus among respondents underscores the demand for video content in e-learning, given its potential to enhance comprehension and concentration. The visual appeal of videos captivates students, facilitating better understanding and sustained interest in learning. Thus, video-based e-learning content holds promise for widespread adoption, offering a means to amplify student engagement and enthusiasm in their studies.

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