

Impact of Using E-module in Learning and Facilitation Systematic Literature Review on Impact of E-module

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Abstract

E-learning plays an important role in the field of education in line with the changing technological advances. This method is a new method that follows the current learning trends in helping students explore knowledge without time limit. Accordingly, the introduction of e-modules using web applications have become a new method replacing conventional methods. There are many studies conducted in a variety of learning methods, but the overall impact related to the use of e-modules are still lacking. Therefore, this study aims to examine the impact of the use of e-modules in learning and facilitation. A systematic literature review was used to achieve the objectives of the study. The results of the study found that there are over 300 related articles and there are 20 highly relevant articles and published in from 2017 to 2020 from various databases. From the analysis and survey conducted, it was found that there is an influence from the use of e-modules in the learning process and facilitation. Among the profound effects that can be seen are through aspects of attitude, performance as well as stimulating active student involvement.

Keywords: E-module, learning and facilitation, impact, attitude, performance, student involvement

Introduction

Technology has boomed and plays an important role in the field of education, considering the importance of 21st century learning in this era. Students are more interested in “paragogy” and “cybergogy” approaches that incorporate a range of modern applications (Asmawati, 2019). This new millennium learning is gaining attraction as a new way to implement the most recent developments in teaching methods. This new millennium of learning is emerging as a new dimension in bringing about the most recent improvements in teaching methods by using media and technology to increase students' comprehension and learning quality in Malaysia. In the area of education, integrating e-learning has become a recent trend. Via online learning and e-learning have become a portal that enable students to access educational resources independently, regardless of time or place (Hazwani & Dalbir, 2016). Thus, the use of text, audio, image, and video streaming in different forms of e-learning, such as e-modules, has created a positive learning ecosystem.

In line with the advent of globalization in education, e-modules aim to replace the roles of modules historically used in the process of learning and facilitation (Dobrescu, Greiner & Motta, 2015). E-modules are a set of modules with a variety of learning experiences tailored to students' abilities. Modules are compiled and created as e-modules, which are presented on the web with a number of variations and components that are not available in physical modules, such as video, animation, and graphics. Students' curiosity is piqued by the use of e-modules in the classroom, and they have also become a major online learning platform in Europe (Wahidah, Ibrahim & Muslim 2019). The structure of online modules has a positive effect on students and teachers, as well as being extremely important in terms of fostering a positive learning atmosphere (Porcaro 2016).

Research background

The Ministry of Education Malaysia (MOE) formulated the Education Action Plan (PTPM) in 2012 as a transformation program to maintain the standard of education in our country. The rebranding of Sixth Form was one of the changes implemented. In terms of performance evaluation and assessment, the Malaysian Exams Council has introduced a reform. The main objective of the Malaysian Examinations Council is to improve the performance and elevate Sixth Form education as well as provide students with an education system at the highest level.

As a result, Economics for Sixth Form as an elective subject in response to educational needs focused on the ability to master facts and theories relevant to economics and the concept of a nation (Muhlisin, Susilo & Amin, 2016). As a result, the concept of using e-modules to construct a special and innovative learning and facilitation in line with the needs of students in the new millennium was conceived. E-module is a series of modules that include learning material in the form of printed materials that have been updated for the use at a web site, audio recording, or electronic-based presentation. Learning through e-modules, according to Mazin and Mohamad (2019), produces a unique result in terms of knowledge distribution by displaying all module elements smoothly and effectively among teachers and students.

Literature Review

E-modules, according to Nina et al. (2019), are electronic modules. Learning materials based on information and communication technology (ICT) that have interactive properties are easier to navigate, view images and videos, and feedback via formative assessments. The aim of research by Nuryake et al (2016) is to create an e-module as a medium of learning for the practice course in Measuring Instruments and Measurement at Yogyakarta State University's Department of Electronics Engineering Education, and to see if the e-module is feasible. The subjects in this research were Electronics Engineering students. A validation sheet and questionnaires were used to collect the data. According to the findings of the alpha test, the medium was of very high quality. Meanwhile, the e-module was found feasible and very feasible in the beta test of the instructional component, in terms of content and assessment, as well as the multimedia aspect. The four indicators, text, picture, animation, and video, were all found feasible in general. In terms of usability, the e-module was considered feasible, with all respondents rating its two indicators, namely instructions and navigation, as very feasible.

According to Kelly et al. (2020), the aim of the study is to examine the Colorado State University (CSU) MOVES online transportation module, which was designed with the goal of encouraging students to use alternative modes of transportation while also providing them with the knowledge and skills they need to travel safely and comfortably. The researchers examine within- and across-group variations in student survey responses over time in this mixed methods study to see how the CSU MOVES transportation module affects students' familiarity, comfortability, and knowledgeability. The module had an immediate and important impact on students' familiarity, ease, and awareness of alternative and active transportation approaches, which lasted throughout the semester. Furthermore, the students who took part in the study had a far bigger effect gains in their understanding of the importance of safe active transportation activities.

The main objective of Jarboe et al. (2016) research to evaluate how students felt about online module content and student learning. In this research, twenty students completed a survey about qualitative aspects of their experiences. As shown by students' self-assessed knowledge and online module assessment ratings, the biomass production module took non-farm students closer to the knowledge level of farm students. Students wanted a better electronic or in-person interaction with the course teacher and peers. This may indicate a connection between student-instructor bonding and grade point average (GPA). Students' interest in connectedness to the teacher may be influenced by market signals such as scholarship GPA minimums and employer interview criteria, as well as higher GPA leading to better positions with higher salaries.

METHODOLOGY

The primary goal of this research is to look into the impact of the use of e-module in learning and facilitation. The main keyword that is e-module were used to pick papers from different publishers. In order to answer the following questions, a total of 20 papers were chosen for the study based on four key phases of the systematic literature review:

i) What is the impact of the use of e-modules in education?

The articles used for this research were taken between 2017 to 2020. It is hoped that the e-module would be able to be an effective, useful application and method of teaching and learning in creating a conducive and user-friendly atmosphere among educators and researchers in elevating the field of education as a result of the

findings from the article review. Khalid, Regina, Kleijnen dan Gred (2003) divide systematic literature review into 4 phase as per shown below.

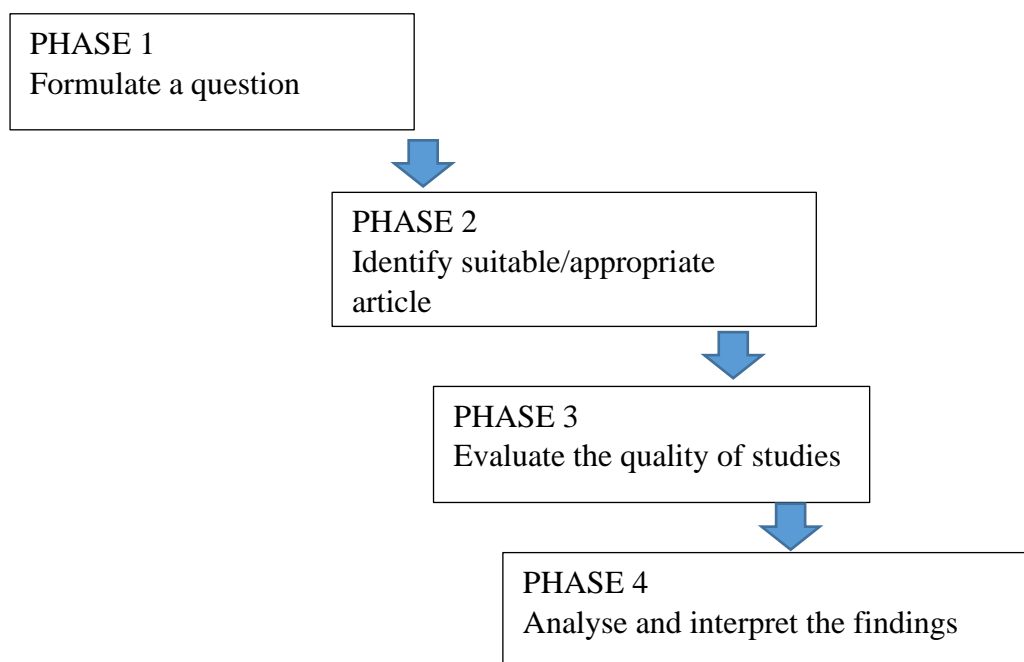


Figure 1: Systematic Literature Review Phase

PHASE 1: Formulate a question

Before conducting a systematic literature review, research questions must first be formulated. In order to extract data from the database, the main key used in this study is e-module in the field of education. As a result, the articles chosen are based on the impact of E-modules in the teaching and learning process.

PHASE 2: Identify suitable/appropriate article

This step entails looking for publications that suit the nature of the research query. The search is carried out in two steps, the first of which involves collecting all of the articles found in the initial search and the second step is focused on the "impact" parameters that are relevant to the research. The search is carried out in many databases, including Scopus, Emerald, and Google Scholar. The chosen articles are from the last five years that were 2016 to 2020. In addition, the languages used is Bahasa Melayu and English only. Among the keywords found to help article search are e-module, the impact of e-module use, and e-module used.

PHASE 3: Evaluate the quality of studies

In order to determine the validity of a systematic literature review, this step goes through two key processes: inclusion and exclusion. Inclusion is a method of evaluating which studies should be included in the literature review. As a result, the search process considers the year of publication, which must be within the last five years, as well as the language used. Although the article selection criteria did not include action research or articles from outside the field of education, the article exclusion process did. The inclusion and exclusion process are used to ensure that the papers chosen can address the research questions and explain the study's findings more explicitly and thoroughly.

PHASE 4: Analyse and interpret the findings

This phase involves the results of a study consisting of 20 articles. All these articles are analyzed in depth according to the set criteria and keywords and the article search details are shown in figure 2 using PRISMA flow chart. Selected articles will also be interpreted according to the research questions and shown in the Table 1.

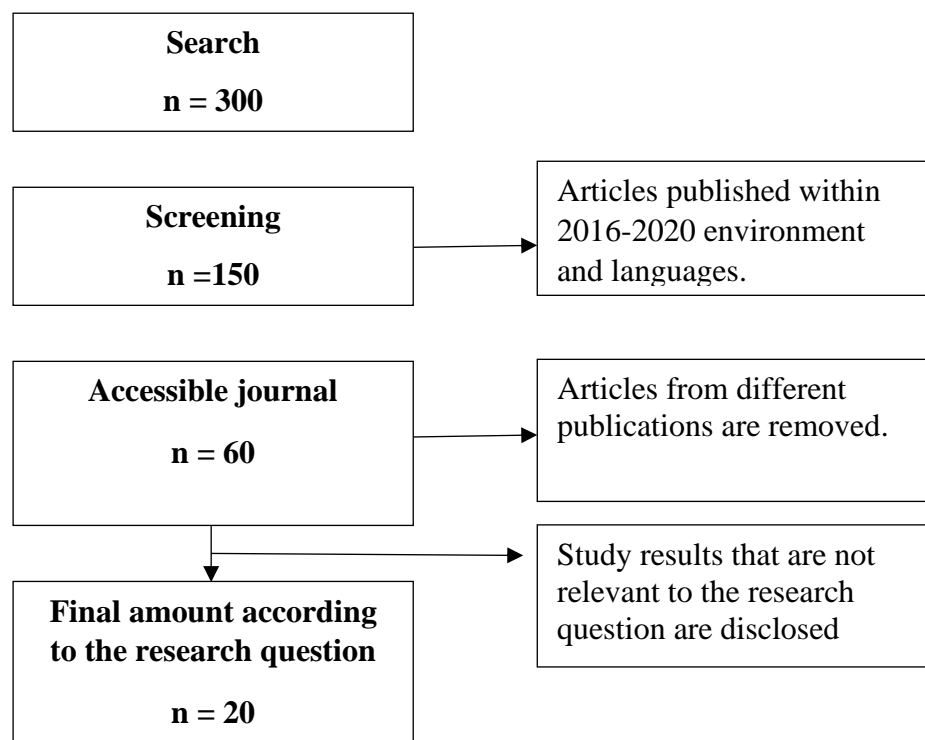


Figure 2: Prism Diagram (Systematic Literature Level)

RESULTS OF THE STUDY AND DISCUSSION

Only 20 relevant papers are chosen based on the research questions during the selection process. The results are listed in the table below.

Table 1: List of selected articles and study findings

No	Author (Year)	Findings
1.	Bachri et al. (2021)	Because students and lecturers can participate in comfortable learning, using technology to assist online learning activities can provide greater flexibility.
2.	Zelther et al. (2021)	Creating an interactive, web-based learning module to develop knowledge and confidence.
3.	Nurhanim et al. (2021)	E-module has a favourable impact on student performance. Overall, e-Module can help weak pupils as well as boost student accomplishment. The e-Module was discovered to be useful in studying the subject.
4.	Feri et al. (2021)	Students can reach their full potential and be utilised as an alternative to increase material understanding in scientific classes.
5.	Nina et al. (2020)	A teaching aid that incorporates a variety of ICT features and allows students to learn on their own.

6. Resita et al. (2020) While students are able to use e-modules as a learning tool, they can only be used in combination with face-to-face learning activities. Those that use blended learning approaches obtain higher outcomes than those who use conventional methods.
7. Sormunen et al. (2020) To assist students obtain a deeper understanding, enhance abilities, increase knowledge, stay motivated to learn, build awareness, and learn to think critically, they use various instructional approaches and use innovative technical solutions.
8. Siti Hayati & Abdul Halim (2020) Students' creative and analytical thinking skills and critical thinking are developed through the use of e-modules in the teaching and learning process.
9. Alin et al. (2019) It has been a platform that has had a huge effect on students and strongly encourages them to participate.
10. Ismi Laili et al. (2019) The use of e-modules encourages students to participate in voluntary learning and allows teachers to use the program to perform the teaching process offline.
11. Komang et al. (2019) Learning has been student-centered and versatile, allowing students to complete the learning process at their own pace flexibly.
12. Oktavia et al. (2019) This e-module combines images, audio, video, and even animation in one package. It aids teachers and students in more productive learning and the development of self-directed learning.
13. Johan Eka & Ade Vidiанти (2019) Innovative and innovative learning approaches that help students become more involved in their studies. Allowing for a range of teaching approaches to be used in education.
14. Ratna Mohd Razali & Adenan Ayob (2019) Capable of enhancing remedial students' reading performance and effectively increasing student motivation. Appropriate to use as a teaching tool.
15. Lindenmaier et al. (2019) When used in combination with conventional learning, e-modules have the ability to improve students' academic competence and interest.
16. Nagavalli et al. (2019) Using e-modules, students engage in active learning, facilitate dynamic learning, and develop positive attitudes.
17. Alaniz and Wilson (2019) E-modules has a positive effect on student's participation when students are involved and completely engaged in the direction of achieving goals.
18. Norhapizah Mohd Burhan Students are able to access and master learning

	& Ab Halim Tamuri (2018)	material more quickly, and their attitudes and desires toward learning are changing.
19.	Kowitlawakul et al (2018)	Creating a long-term learning environment and piquing students' curiosity about learning. Students are taught how to develop self-discipline in their studies.
20.	Ying & Winnie (2017)	Has the opportunity to improve student participation while also increasing the attractiveness and originality of learning.

Based on the papers examined, it can be inferred that students have a significant effect in a variety of ways. In terms of students attitude, students performance, and active participation of students, these are some of the most significant results.

Attitudes

Attitudes are actions and holdings that are absorbed through behaviour. A study using e-modules on economics students, Irwansyah (2017) discovered that students' attitudes had changed and that they are interested in learning the subject. As a result, students take control of their learning by searching for content in the e-module. This situation allows students to answer questions using values as well as knowledge gained from information or content. This statement is backed up by Nagavalli, Rozniza, and Voon (2019), who claim that by using e-modules, students engage in active learning, facilitate dynamic learning, and develop positive attitudes. Thus, using e-modules to teach and learn encourages student participation in the classroom (Istuningsih 2018).

Performance

According to Ahmad Fkrudin, Wan Norina, and Nor Khayati (2019) finding, the use of e-modules increases student's performance which indicates an improvement in Polytechnic students' performance for the semester studied. Vimala & Lay (2017) backs up this argument, citing the findings of a study that showed that students in the treatment group who used e-modules performed better than students in the control group who only used print media as a guide. E-modules, according to Hill, Manjula & Helen (2015), often provide a platform for students to contribute ideas and, as a result, generate students' minds. This is supported by a study conducted in Indonesia by Ainun, Zamri & Wan Muna (2018), who investigated the impact of e-modules and discovered that implementation improves student's results. When opposed to conventional approaches, students are able to reach higher levels of achievement.

Student's active involvement

According to Alaniz and Wilson (2019), the introduction of e-modules has a positive effect on student's participation when students are involved and completely engaged in the direction of achieving goals. Genc & Sahin performed a survey in Turkey to assess the effect of using e-modules (2016). Where there are different relationships with two different groups of students, the findings provide a result that stimulates student engagement. The students who used the e-module teaching aids had a high level of overall and active participation, according to the findings. This is due to the fact that e-modules have become a communication medium. With flexible time, students who lack confidence may actively interact among themselves and even with teachers. This condition supports and aids students who are having communication difficulties. (Chalabhorn, 2018) As a consequence, using e-modules implicitly encourages student's participation in the learning and facilitation process.

CONCLUSION

Following the Ministry of Education Malaysia's aim of achieving international-standard learning and facilitation, the use of e-module has become an essential medium for students to access materials and knowledge online at any time. Therefore, all educators should be educated about the impact of using e-module. Thus, the main motive of this paper is to review the impact of the use of e-module within and outside the country. Based on the articles examined, it can be inferred that using e-module can help students develop positive attitudes, improve their success, and actively engage them in their learning, as well as learning can be done flexibly, that is, at any time. While e-module have a positive impact, they are subject to limitations during implementation. Therefore,

prospective researchers will need to undertake additional research to address the concerns that have emerged in the implementation of e-modules in education.

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