

The Effectiveness of Mobile Learning-Based Meaningful Learning Model

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Abstract

The successful execution of a strategy, approach, model, technique, and learning material intended by educators to deliver appropriate learning activities for students determines the attainment of learning objectives. Using the systematic review study approach, this study intends to analyze the efficacy of a meaningful learning model based on mobile learning. Between 2016 and 2023, we scoured the web and a variety of academic databases for relevant articles. These included Journal Storage (JSTOR), ProQuest, SAGE, Scopus, PubMed, and Google Scholar. Combinations and combinations of multiple terms were employed as keywords. There were a total of 6538 journal articles found that were relevant to the keywords. The PICOS framework served as a reference for choosing inclusion and exclusion standards for journals that will be examined. Full text publications that highlight meaningful learning based on mobile learning were eligible research in the identification and selection process. The criteria set out in this study, however, did not address either discussing learning techniques or meaningful learning based on mobile learning. According to the findings of this study, the mobile learning-based meaningful learning model is extremely successful in supporting crucial components in the implementation of the autonomous curriculum. Students may easily complete the learning process by using mobile learning-based relevant learning models, which can be accessible at any time and from any location. To provide students adequate time to explore ideas and improve their competency with each lesson's topic, it is advised that research be done to build more specialized learning models for the subjects they are taught in school.

Keywords: Model, Meaningful Learning, Mobile Learning.

INTRODUCTION

Advancements in the fields of science, technology, and communication during the 21st century have presented promising prospects for enhancing the caliber of education. Enhancing the caliber of education entails the integration of novel advancements aimed at fostering a conducive learning environment and facilitating a learning process that enables students to actively cultivate their potential throughout the domains of attitudes, knowledge, and skills. The learning process encompasses a sequence of interactive actions that engage different facets of learning to attain a certain learning aim. Throughout history, several scholars have engaged in ongoing discussions and deliberations over this same learning purpose (Chan, 2016; Sin et al., 2017).

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The attainment of educational goals is predominantly dependent on the effective execution of a strategy, approach, model, technique, and learning medium devised by educators to provide optimal learning experiences for students. The primary objective of this educational endeavor is eventually focused on personal development and advancement, as well as achieving satisfaction and qualification within the professional realm (Sin et al., 2017; Sindre, 2018), and, the greatest preparation for future employment via gained knowledge and abilities, as well as to guarantee that one can fulfill the demands of economically sophisticated cultures (Chan, 2016; Joseph et al., 2020).

Susanto (2013) claimed that a successful learning process for students must include learning activities that help students improve their thinking abilities; a learning process that focuses on students' capacity to memorize information may cause them to become used to just storing knowledge without understanding it. This is supported by Carracedo et al (2018) who stated that the academic performance of a student is hindered when their acquisition of information remains confined and fails to be used in practical contexts (Carracedo et al., 2018; Kostianen et al., 2018).

The current educational practices frequently overlook the ideas and processes involved in understanding learning. Instead, the emphasis is mostly placed on the assessment of learning outcomes as the sole measure of success in the learning process. Due to the prioritization of cognitively established assessment criteria that neglect the comprehension of concepts, students frequently find themselves confined to the practice of rote memorization devoid of genuine grasp of information. Gowins, as referenced by Moreira (2011), posited that learning encompasses diverse interpretations among instructors and students with respect to the acquisition of information pertaining to a certain subject within the curriculum.

According to Ausubel's (1963) theory of meaningful learning, the acquisition of knowledge is enhanced when new information is connected to previously learned or recalled notions, such as facts or generalizations, hence increasing the meaningfulness of the learning process for students (Ausubel, 1963; D. P. Ausubel et al., 1978). The act of connecting novel knowledge with pertinent ideas that students have acquired and retained assumes a significant role in the process of learning, enabling students to comprehend the principles inherent in the subject matter under examination.

In his research, Lee (2015) elucidated the significance of educators possessing expertise in utilizing digital media to attain efficacious learning objectives. This experience enables educators to cultivate operational and functional proficiencies in technology utilization, hence facilitating the creation of successful learning environments (Lee, 2015). This statement is supported by the results of the study of Lin et al (2017) that asserted that the efficacy of digital learning is contingent upon educators' ability to effectively employ instructional methodologies, establish conducive learning environments, and embrace the use of digital learning tools (Lin et al., 2017).

This therefore serves as the foundation for emphasizing the significance of developing learning through technology media. With technological advancements, the modern world appears to have transformed into a global village, with people's relationships facilitated by a network established by the internet. In Indonesia, the figure has risen to 204.7 million, representing 73.7% of all internet users (We Are Social, 2022). The majority of internet users in Indonesia belong to the group known as group Z (Gen-Z). The internet has become more familiar among Indonesian teenagers, particularly at the junior and senior high school levels. Due to the fact that junior and senior high school pupils are members of the generation Z cohort (Andrea, Gabriella, & Timea, 2016, p. 92).

In the context of implementing the Merdeka Curriculum, educators are expected to engage in professional design of impactful and purposeful learning experiences. This involves the organization of learning activities, selection of appropriate instructional approaches, establishment of effective learning procedures, and the establishment of

criteria for assessing student success. The significance of curriculum development lies in its alignment with the ongoing progress in science, technology, arts, culture, and societal transformations at the local, national, regional, and global scales in the forthcoming years. One notable distinction between the 2013 Curriculum and the Merdeka Curriculum lies in the reintroduction of the informatics topic, which had been previously omitted from the former. Under the Merdeka Curriculum, the informatics subject is now incorporated into the curriculum at the junior high school level. This decision has been made in light of the recognition that the advancement of informatics has had a significant impact on several facets of human existence (Warsihna, 2014).

Based on the findings of a preliminary investigation conducted during the 2022/2023 academic year at Madrasah Aliyah Annida Al Islamy, it was observed that a significant issue exists about the insufficient time allocated for a weekly study session of one hour, which was now limited to a duration of 45 minutes. In order to ensure that the topic matter is not effectively communicated. Hence, based on the aforementioned description, researchers are currently endeavoring to evaluate the efficacy of a mobile learning-based meaningful learning framework. This framework aims to offer students the convenience of engaging in learning activities that are accessible at any time and from any location. It is considered a crucial element in the implementation of the Merdeka Curriculum.

METHODS

The present study employed a systematic review methodology. A systematic review is a rigorous examination of scholarly papers that involves the synthesis of existing evidence. The evaluation was undertaken to assess both the quantitative and qualitative elements of the primary research investigations, with the objective of consolidating the existing knowledge on a certain subject matter. Following the compilation of the pertinent publications, the researchers proceeded to conduct a comprehensive analysis and subsequently juxtaposed the information presented therein with comparable sources (Manterola et al., 2013).

Using the method of systematic review, this investigation seeks to evaluate the success of a mobile learning-based meaningful learning model. Between the years 2016 and 2023, online searches of a number of databases, such as Journal Storage (JSTOR), ProQuest, SAGE, and Scopus, as well as PubMed and Google Scholar, were utilized to retrieve article searches. Combinations and multiple-word mixtures were employed as keywords. There were a total of 6538 journal articles that may be considered relevant to the keywords used. The PICOS framework serves as a reference for choosing inclusion and exclusion standards for journals that will be examined. Studies that met the criteria for eligibility in the discovery and decision-making process were those that were published as full texts that examined meaningful learning as it related to mobile learning. There was no mention of learning strategies or the significance of mobile learning in the study's criteria. To describe these articles that made it through the initial screening, the PRISMA diagram (Fig. 1) was used. To determine whether a study satisfied the criteria for inclusion, researchers used the Joanna Briggs Institute (JBI) Critical Appraisal instrument to each study. This tool was used to evaluate the quality of the methods employed in various types of Quasi-experimental studies and randomized controlled trials.

RESULTS

A search using the terms "meaningful learning model, mobile, learning" turned up 4011 possible articles in the results from 5 databases. Six articles remained that fit the theme of the literature research after the duplicates and articles that were pertinent to the subject were eliminated. With a high score in The Joanna Briggs Institute's (JBI) Critical Appraisal, 6 articles had passed the preliminary screening. A total of 425 people

responded to the 6 articles, with a search age of 9 years and up on average. A shift toward relevant learning models based on mobile learning has improved the standard of student learning (Zawawi, N. S. M., & Judi, H. M., 2020).

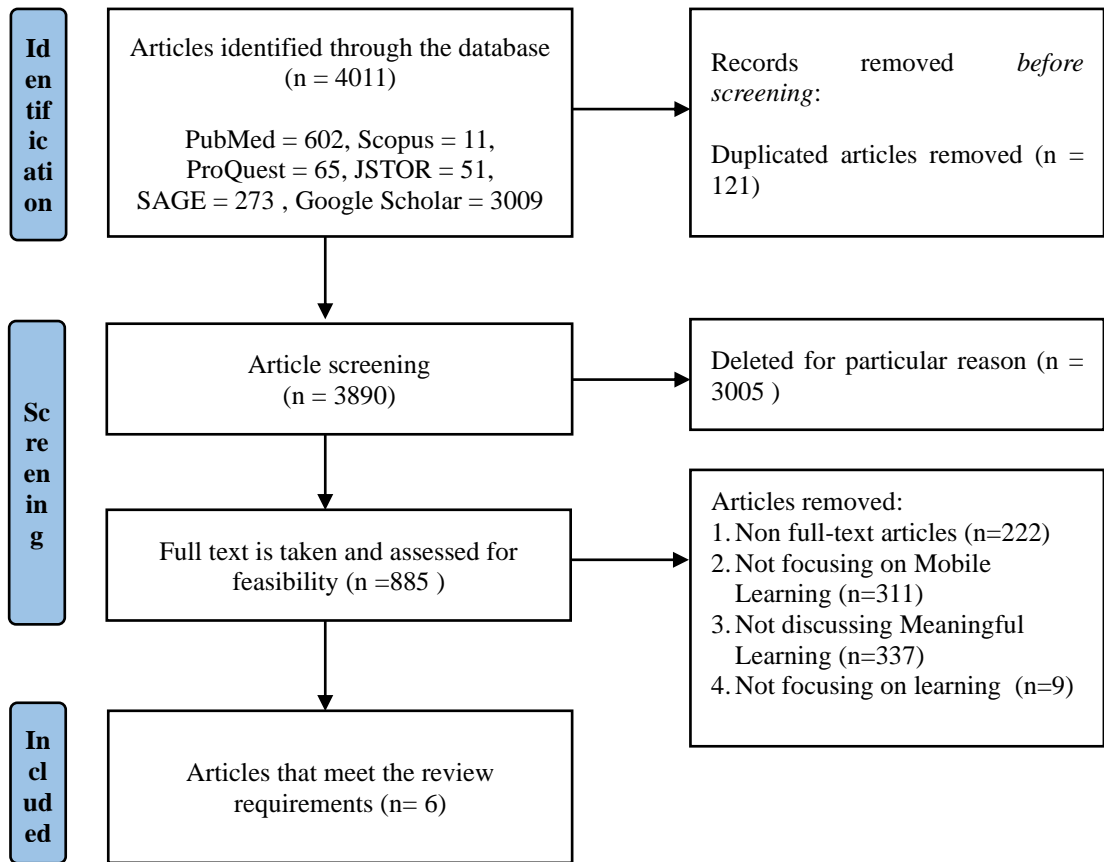


Figure 1. Systematic Review Flow Diagram. The PRISMA flow diagram for the systematic review detailing the database searches, the number of abstracts screened and the full texts retrieved.

Table 1. Results of Article Review on the Effectiveness of Mobile Learning-Based Meaningful Learning Models

No	Author	n	Mean Usia	Total Groups	Results
1	Mendoza, D (2018)	100	18-20	4	The study's findings indicated that utilizing mobile devices to teach students will increase their knowledge of what they are learning. In addition, students report that having adequate time to learn thanks to the use of software in meaningful learning.
2	Setyowati, N., & Mawardi, M. (2018)	40	9-11	4	Mathematics learning results may be enhanced by the interaction of project-based learning and meaningful learning. The data indicated that the level of students' mathematics learning results in cycle 1 was 72.5%, which subsequently rose to 80% in cycle 2.
3	Azrul, A., & Rahmi, U. (2021).	158	15-19	1	The inclusion of many forms of content, such as text, photos, audio, video, and animation, may greatly enhance the effectiveness of learning tools for students in comprehending

					and understanding academic material. E-Learning Content Development can Enhance Meaningful Learning in Schools.
4	Bartolini, M., Lamonica, V., (2021)	31	12-14	1	The mathematics learning media that incorporates edutainment elements is presented through Android mobile games. This kind of media is evaluated based on several criteria, including enjoyment, engagement, pleasure, motivation, interest, and curiosity, all of which are scored positively. This implies that the inclusion of students' motivation in learning is considered a good criterion.
5	Hastuti et al., (2017)	71	15-17	2	The increase from an average pre-test score of 73.67 to an average post-test score of 80 demonstrated that mobile learning-based biology learning media may foster enthusiasm for learning.
6	Talakua, C., & Elly, S. S. (2020)	25	13-15	1	After considering the findings and discussions, it is possible to deduce that mathematics learning media by employing android-based mobile learning on flat-sided geometric material for grade VIII junior high school students tested at SMP Islam Bahrul Ulum Tasikmalaya were feasible for implementation, with good criteria.

DISCUSSION

With the use of the learning system design model, educators may create learning processes and instructional materials that are tailored to students' individual requirements and help them succeed. Learning principles, psychological, sociological, and other theories that underpin them are used by experts to create learning models (Rusman, 2014, p. 132).

The researchers in this study attempted to evaluate the efficacy of the learning design model, which is primarily focused on creating relevant learning models that may support students' learning by employing technology and mobile devices. There are numerous learning system design models available. Through the use of several senses in addition to hearing the teacher describe the topic, students engage in meaningful learning, which gives them a more direct experience of what they are learning. Active, constructive, deliberate, authentic, and collaborative learning is what leads to meaningful outcomes, according to a number of research (Chai et al., 2011; Jonassen & Strobel, 2006; Koh, 2017; Mystakidis et al., 2019; Nelson & Hawk, 2020; Pavisich, 2018).

Mendoza, D (2018) found that The proposition has been made to utilize software as a means of modeling the teaching and learning process. This underscores the need of engaging in active knowledge exchange within a community. Without a physical form, software is a computer work system that may be placed on a computer, laptop, or mobile device and used as needed. Kumar & Mohite (2018) agreed that the concept of Mobile Learning encompasses portable and mobile information technology devices, such as Personal Digital Assistants (PDAs), cell phones, laptops, tablets, personal computers (PCs), and similar devices.

Setyowati, N., & Mawardi, M. (2018) explained that Project-based learning and meaningful learning work together to increase learning outcomes that may be used in primary school instruction. Together, project-based learning and meaningful learning have a beneficial effect on both educators and their students. This is in line with Nam &

L. Smith-Jackson (2007) who stated that The optimization of meaningful learning and learning interactions may be achieved via the utilization of appropriate technology. The best way to combine meaningful learning with technology must be understood by those who design it (Eriksson, 2012).

Text, graphics, audio, video, and animation content assistance can maximize the usefulness of learning tools for students in comprehending subject matter (Azrul, A., & Rahmi, U., 2021). In order to bridge the gap between context and content, technological mobility gives students freedom in terms of when and where they learn. In this learning context, students necessitate diverse interaction patterns, specifically pertaining to social mobility, and a variety of knowledges to effectively navigate their educational journey. The utilization of technological mobility can also facilitate the dissemination of knowledge across temporal dimensions (Sharpley et al., 2009).

Bartolini, M., Lamonica, V., (2021) described that The mathematical learning medium that incorporates elements of both education and entertainment is presented in the form of Android mobile games, and is evaluated based on many factors, including enjoyment, interest, satisfaction, motivation, desire, and curiosity, all of which meet good criteria. Hastuti et al., (2017) supported that The utilization of mobile learning as a platform for biology education has the potential to enhance students' engagement and enthusiasm towards the learning process. The use of Android-based mobile learning for mathematics education is a viable option for schools (Talakua, C., & Elly, S. S., 2020).

In the context of education, both meaningful learning and general learning are enhanced by the presence of learning interactions. Therefore, meaningful learning is a deliberate endeavor to enhance the level of interaction among peers, between students and teachers, and between students and their educational materials, rather than only focusing on the transmission of content. As a result, creating student activities via a variety of interactions and learning experiences can also be referred to as meaningful learning. Also, ways to run the system of learning through active learning methods that lead to independent learning (Yamin, 2007, p. 81). Students gain information, comprehension, and other elements of behavior via learning, as well as significant skills for life in society (Hamalik, 2008, pp. 171-172). The supreme goal of meaningful learning is independent learning ability.

The explanation that followed highlights the significance of meaningfulness in learning that is pertinent and appropriate in constructing meaningful learning. Several suggestions for leveraging various technologies creatively and creating material that is rich in inspiration and engages students in meaningful learning processes have emerged from recent studies (Torda, 2020).

CONCLUSION AND RECOMMENDATION

The study's findings indicated that the mobile learning-based meaningful learning model is highly successful in facilitating key elements of autonomous curriculum implementation. Mobile learning-based meaningful learning models provide students with the convenience of accessing educational resources at any time and from any location, hence facilitating the learning process.

It is advisable to do research in order to formulate more precise instructional models for the disciplines taught in schools, so affording students' ample opportunity to delve into concepts and enhance their mastery of each subject matter being taught.

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