

Digital Educational Game in Elementary School

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Abstract: Gaming is one example of how quickly technology is evolving. Games are one of the favorites for both children and adults. There are so many types of games, including one digital educational game. Digital educational games are games that are specially made to contain subject matter to assist students in learning. But the development of digital educational games has not been widely found in the Play Store application, so many academics try to develop them. The purpose of this study is to identify problems with the use of digital educational games as media and learning resources in elementary schools. The research was conducted using a literature review. This research focuses on articles that discuss digital educational games on the Google Scholar page. Google Scholar was chosen because it is considered a platform that provides various types of scientific articles that have been published in journals in Indonesia. The results of the study show the obstacles to using digital educational games in elementary schools, namely: 1) facilities and infrastructure; the availability of educational games is limited, the development process takes a long time, not all subjects can use them, and android-based games require smartphones with high specifications, as well as the dependence of educational games on the internet network; 2) students; not all can operate computers, and not all students have smartphones; 3) Teachers are hesitant to use educational games because the development takes longer and the curriculum is still focused on books.

Keywords: Game Digital, Education, Elementary School.

Introduction

Technological developments affect all areas of human life, including education. The result of technology itself can occur because of the increasing quality role of education so that education and technology is a unit that influences each other. Technological advances are developing very rapidly making the process of education and learning also increasingly quality. One of the impacts of technological developments in the field of education is the use of digital educational games.

A game is a game that uses electronic media and is designed to be as interesting as possible so that players can gain inner satisfaction. Playing games is a means of learning. The type of game really depends on the time. When viewed from the graphics used in game applications, game application can be classified into two type, namely 3D (two-dimensional) and 3D (three-dimensional) game applications (Barokum et al., 2019).

Game is a game that everyone, regardless of age, enjoys. The same goes for elementary school children. Playing games on elementary school-age children certainly has such an impact. The positive impact of online games is that they can train children in cooperation, concentration, English, speed, creativity, fun, patience, and reducing stress. While the negative impacts of online games are addiction and bad attitudes such as speech spoken while playing and bad attitudes while playing such as tapping tables, robbing or stealing other people's rights, and lazing around with activities other than playing online games (Mertika & Mariana, 2020) There are various types of games that children can currently access, but it's a shame that out of all these games there are very few that can be used to support learning activities. Educational gaming is one type of game that can be used to promote learning.

According to Prensky (2012), educational games are games that are designed to teach but cannot

provide play and entertainment. This educational game is a combination of educational content, learning principles, and computer games. This type of educational game aims to arouse children's interest in learning the subject matter presented. This type actually refers more to the content and purpose of the game than the actual type.

The average game that circulates in the Play store is designed and created solely for entertainment purposes. Therefore, many academics, including students, lecturers, and teachers, tried to make and develop an educational game. With this educational game, they hope to make students feel happy and excited about learning and help students to understand the material being studied well. The use of digital educational games in learning is proven to be able to increase student enthusiasm and learning outcomes (Muslim & Dermawan, 2020). However, the creation and development of educational games carried out by academics is certainly not as interesting as the games available on the Play Store. Therefore, this research was conducted with the aim of simplifying the problem of using digital educational games as media and learning resources in elementary schools.

Materials and Methods

This study is a review of the literature. Literature review is a research method with the aim of collecting and obtaining the gist of previous research and then analyzing it. Literature results were obtained from several articles by looking for similarities, and then conclusions were drawn. Articles that meet the criteria are then prioritized based on their utility.

Search procedure the sources for data acquisition were obtained from articles via the Google Scholar web using two keywords, namely "digital educational games" and "elementary schools." An online search for data sources was conducted from late November to mid-December 2022.

Selection procedure collecting abstracts from several articles, please read on. Determine the

compatibility of the literature's contents with the specified criteria.

1. Published between 2017-2021
2. Literature on the topic of digital educational games

The data analysis procedure was carried out by means of the data that had been collected and then recorded: the author's name, year of publication, research location, subject, research objectives, research methods, and research results. After doing this, we compare one article with another and then present the data in the form of an article.

Results and Discussion

Based on the search result on Google Scholar, at least 26 (twenty-six) articles were found that discussed digital educational games in elementary school and/or Islamic Elementary School. The twenty-six articles were published in 2017 with a total of five articles, in 2018 there was one article, in 2019 there were eight articles, in 2020 there were five articles, and in 2021 there were seven articles. In more detail, the distribution of these articles can be seen in the table below;

Table 1. Research data on digital educational games for five years

Years	Name	Article Title
2017	Himsyari Almuatiry Emlka	Game edukasi Bahasa Indonesia kelas 1 sekolah dasar berbasis android menggunakan DGBL-ID Model(Emlka, 2017)
	Nia Saurina	Game Edukasi Sebagai Media Pembelajaran untuk Kelas IV SDN Banjaragung II Menggunakan Blender 3DSuirtina, 2017)
	Ratih wulandari, herawati Susilo, dedi kuswandi	Penggunaan multimedia interaktif bermuatan game edukasi untuk meningkatkan aktivitas dan hasil belajar siswa sekolah dasar(Wulandari et al., 2017)
	Wingga Pratama, Ngarah Ayu dan Hnry Januar Saputra	Pengaruh Media Game Edukasi "Teke-teki Pengistihuan" Terhadap Minat Belajar Siswa pada Mata Pelajaran IPA Kelas 5 SDN 03 Protomulyo(Wingga Pratama, Ngarah Ayu, 2019)
	Ratih wulandari, herawati Susilo, dedi kuswandi	Multimedia Interaktif bermuatan Game Edukasi Sebagai Salah Satu Alternatif Pembelajaran IPA di Sekolah Dasar(Wulandari et al., 2017)
2018	Adesetyawan Pratama Putra, Yerry Soepriyanto, Aarafah Husna	Pengembangan Multimedia Game Edukasi Tentang Keragaman Makanan Khas Daerah-Daerah di Indonesia untuk Kelas V SD
2019	Qodhli Jafar Adrian, Apriyanti	Game edukasi Pembelajaran Matematika untuk anak SD Kelas 1 dan 2 Berbasis Android(Adrian & Apriyanti, 2019)
	Listika Yusi Risenari, Arum Adita	Game Edukasi Digital untuk Meningkatkan Minat Belajar Peserta Didik pada Mata Pelajaran IPA
	Fatah Yasin Al Isyadi, Rifai Annas, Yogek Indra Kurniawan	Game Edukasi Pembelajaran Bahasa Inggris untuk Pengenalan Benda-Benda di Rumah Bagi Siswa Kelas 4 Sekolah Dasar(AI Isyadi et al., 2019)
	Muhammad Miftakul Rohadi Putra, Sukirman, Astriana Jihan Kusumawati	Pengembangan Game Edukasi Sebagai Media Pembelajaran Materi Bangun Ruang Sekolah Dasar
	Risqi Ervera Nur Arifah, Sukirman, Sujahwo	Pengembangan Game Edukasi Biomatika untuk Meningkatkan Hasil Belajar Siswa pada Mata Pelajaran Matematika Kelas 1 SD(Arifah et al., 2019)
	Rian Maulana, Derry Martha, Petrus Sokibi	Perancangan dan Pembuatan Game Edukasi untuk Pembelajaran Bahasa Inggris Kelas 1 SD Berbasis Android (Studi Kasus: SDY Sabilul Qur'an Endika)
	Hendra S. Mokoginta, Virginia Tulenan, Brave A. Sugiarso	Aplikasi Game edukasi 2D Pengenalan Bahasa Daerah Toraja untuk Anak Sekolah Dasar
	Ahmad Kharisudin Ashar, Munawarab, Agus Sitansujah	Penerapan Game Edukasi "Speak English" pada Sekolah Dasar Menggunakan Teknolog Speech Recognition
	Taufiq Subhanul Qodr	Media Pembelajaran Game Geograpiea untuk Anak Sekolah Dasar di Era Digital
	Petrus Sokibu, Ady Widjaja	Game Edukasi Pembelajaran Bahasa Inggris Berbasis Android untuk SDIT Sabilul Qur'an Cendekia
2020	Muhammad Erfan, Arif Widodo, Umar, Radisman, Turisna Ratu	Pengembangan Game Edukasi "Kata Fisika" Berbasis Android untuk Anak Sekolah Dasar pada Materi Konsep Gaya
	Fatah Yasin Al Isyadi, Aziz Prasuci Priambadha, Yogek Indra Kurniawan	Game Edukasi Bahasa Arab untuk Siswa Sekolah Dasar Kelas IV
	Hitar Rofoqoh, Dana Puspitasari, Zulinda Nursaidah	Pengembangan Game Match Space Adventure Sebagai Media Pembelajaran pada Materi Pecahan di Sekolah Dasar(Rofoqoh et al., 2020)
	Dwi Jayanti, Jelita Intan Septiani, Ika Candra Sayekti, Ipan Praswoyo, Irma Yuliana	Pengenalan Game Edukasi Sebagai Digital Learning Culture pada Pembelajaran Sekolah Dasar
	Hayu Ika Aringgaini, Nurhayati, Shirley Rizki Kusumaningrum	Penerapan Media Pembelajaran Game Matematika Berbasis HOTS dengan Metode Digital Game Based Learning di Sekolah Dasar(Dasar et al., 2021)
2021	Aminu Zakiyah, Yatim Riyanto, M. Jacky	Pengembangan Media Game Edukasi Kincah Pintar Asean Melalui Pembelajaran Daring untuk Meningkatkan Motivasi dan Hasil Belajar Peserta Didik Kelas VI Sekolah Dasar(Zakiyah et al., 2021)
	Ririn Windawati, Henry Dewi Koeswanti	Pengembangan Game Edukasi Berbasis Android untuk Meningkatkan Hasil Belajar Siswa di Sekolah Dasar(Windawati & Koeswanti, 2021)

The author only found three articles that were not development research, namely articles that used the true experiment method, articles that were literature reviews, and articles devoted to strengthening digital literacy through educational games. The three articles were published in journals with the titles: (1) The Effect of Educational Game Media "Knowledge Puzzle" on Student Learning Interests in Science Subject Class 5 SDN 03 Protomulyo; (2) Application of HOTS-Based Mathematical Game Learning Media with Digital Game-Based Methods Learning in Elementary Schools; and (3) Introduction of Educational Games as a Digital Learning Culture in Elementary School Learning. (Wingga Pratami, Ngurah Ayu, 2019)(Anggraini et al., 2021)(Jayanti et al., 2021)

Almost all of the research in the article uses the development or R&D method, whether written directly in the title or explicitly. There are several types of development carried out, such as the creation and development of android-based, web-based educational games, and also development using social media.

By looking at the type of research that has been done, it can be said that the number of educational games available in the Play Store is still very minimal. In addition, this shows that the need for digital educational games for learning in elementary schools is very high. This can be seen from the research data that has been conducted, which shows that the use of digital educational games in learning is proven to be able to increase learning interest, activity, motivation, and student learning outcomes.

The manufacture and development of digital educational games is generally carried out using the first two 4-D (four D Model) development models, namely the definition stage, the design stage, the development stage, and the deployment stage. The second model used is the development of the ADDIE model with five stages: analysis, design, development, implementation, and evaluation. The development stages of these two development models are actually almost the same, where each stage requires quite a long time to design it, so if you want to use an educational game in learning, the teacher must prepare or

design the educational game long before the material is delivered.

Educational games developed and used in elementary schools are more focused on making Android-based games. Android is a mobile operating system based on a modified version of the Linux kernel and other open source software, designed primarily for touchscreen mobile devices such as smartphones and tablets. Thus, the use of digital educational games in learning requires a mobile phone with high specs and can only be used if there is an internet connection. Based on data from the Association of Indonesian Internet Service Providers (APJII), the number of internet users in Indonesia is 143.26 million, or approximately 55% of the population. This means that there are still 45% of the population, or around 117 million people, who are still untouched by the internet. Of course, this must be considered by teachers, considering that not all schools have an internet network.

In addition to internet access problems, the development of Android-based educational games also requires users to use mobile phones or tablets that have an Android system. Teachers also need to pay attention to this, even though the number of smartphone users in Indonesia continues to increase, as in 2021 it was recorded that 90.54% of households in Indonesia already have at least one cell phone number, but not all students have one and are given permission to use cell phones by their parents.

The material in educational games that have been created and developed is relatively narrow; from 23 articles on educational game development, it is known that 12 games focus on one subject and 11 games focus on concepts, or only one material. The digital educational games developed focus on certain subjects such as science, social studies, Indonesian, mathematics, Arabic, and English, and there has been no development of educational games that refer to thematic learning. Even though we all know that the presentation of material in the 2013 curriculum used in elementary schools is no longer separated into subjects but combined with a theme system, often referred to as "thematic learning," This means that the educational games

developed are still not able to adapt to the curriculum used in elementary schools.

Conclusions

Based on the results of the research that has been conducted, it shows that the obstacles to using digital educational games in elementary schools are divided into three groups: 1) facilities and infrastructure; the availability of educational games is limited, the development process takes a long time, not all subjects can use them, android-based games require smartphones with high specs, and the dependence of educational games on the internet network; 2) students; not all of them are able to operate computers, and not all students have smartphones; 3) The teacher is not ready to use educational games, requires more time, and the material is still focused on books

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