Development of Web-Based Learning Media in the Era of Pandemic

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A B S T R A C T

Aims Naturally, the advancement of information and communication technology has a good effect on improving the learning process by incorporating physical digital education literacy as a medium for student learning. Analyzing digital education literacy as a teaching tool for Universitas Singaperbangsa Karawang students who study online was the aim of this study.
Instrument & Methods The research was carried out in Karawang, Indonesia at Universitas Singaperbangsa Karawang from March to July of 2021 on 104 students who participated in this study. The research tool was a questionnaire given online through Google Form.
Findings The percentage of 88.57% was classified as being "extremely practical" according to the results of the expert and material validation. Results from kids using web-based media fall into the "Very Appropriate" category with a proportion of 84.17%.
Conclusion Therefore, it can be disputed that Universitas Singaperbangsa Karawang students can effectively use the Digital Literacy of Physical Education as a Website-Based Learning Media.

Keywords Literacy; Physical Education; Social Media

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C I T A T I O N   L I N K S

[1] Pendidikan dalam Upaya ... [2] Physical education teachers' and ... [3] Implementasi pendidikan jasmani ... [4] Twelve tips for COVID-19 friendly learning ... [5] Tracing the development of teacher knowledge ... [6] Will tomorrow's physical educators ... [7] Uses of technology by science education professors ... [8] Teachers' tools for the 21st century ... [9] The state of affairs of teacher education with respect ... [10] Digital literacy learning system for ... [11] Digital natives' behaviours and preferences ... [12] Helping students become literate in a ... [13] Literasi Sains dalam Pembelajaran ... [14] Hubungan literasi digital dengan Kualitas ... [15] Pola literasi visual infografer dalam pembuatan ... [16] Promoting digital literacy skills: examples ... [17] Using digital technology to enhance student ... [18] Aligning Digital Video Technology ... [19] Pengembangan video pembelajaran bulutangkis ... [20] Owens. Multimedia-Based Instructional Design ... [21] IBM computer usability satisfaction ... [22] Aspek dan kriteria penilaian ... [23] Software engineering: a practitioner's ... [24] Pengembangan multimedia pendidikan ...

Introduction

People are currently using technology in the teaching and learning process, which is progressing at a rapid rate alongside the growth of digital technology [1-3]. It must be compelled due to the COVID-19 pandemic's effects, which have caused technology to proliferate quickly and become more obvious. The paradigm of in-person instruction has been replaced by online instruction due to the current epidemic [4]. Students and lecturers are being forced to adjust their demands in the learning process to technology advancements as a result of the COVID-19 pandemic's current effects.

Researchers have recently focused heavily on the topic of effective teacher preparation for employing educational technology [5-8]. Teaching education programs frequently address issues like developing a knowledge basis for creating and implementing technology-infused lessons in education and how to teach subjects with technology in a pedagogically suitable way [9].

Students' efforts to overcome the problems ahead are facilitated by instruction in digital literacy [10]. Students must adjust to the digital generation in the field of physical education. Due to the aggressive digital technology development that has occurred at an accelerated rate and the extremely quick technological advancements that have an impact on student learning behavior habits, this generation has a distinct way of thinking and learning [11]. With the advancement of technology and digital literacy, achieving goals can be greatly aided [12]. The outcome of an innovation response is the desired goal in the growth of the physical education field. According to research by Muchsini & Siswandari [11], if the learning process is monotonous for the previous age, the digital generation will feel stressed and bored.

Given that digital literacy is a growing concern, this research is urgent. At the moment, physical education is a requirement for students at Universitas Singaperbangsa Karawang. When learning is first being done, reading textbooks and references is the primary method of instruction. The creation of this physical literacy website will significantly aid students' and lecturers' learning. A draw to learning in the twenty-first century is the use of learning material like this website. However, the courses were entirely delivered online because of the COVID-19 epidemic. In this situation, lecturers, especially those who deliver messages as facilitators in the Physical Education, Health, and Recreational Education study program at Universitas Singaperbangsa Karawang, are expected to have a skills-based perspective on digital literacy. Students have additional options for learning collaboration with a digitally based learning system thanks to this physical education digital literacy website, which allows them to explore and learn more.

The ability to access information quickly, easily, and in almost large quantities makes the internet a popular information source among students. Physical education literacy skills are fundamental things that students must have to face the global era and be able to meet the needs of life in various situations [13, 14]. Additionally, according to Muthiah *et al.* [15], the literacy pattern is a form or structure that is carried out continuously by a group of individuals as they go through a succession of learning phases, beginning with receiving and reading and ending with creating.

Digital literacy encompasses more sophisticated skills like cognitive, physical, sociological, and emotional capacities in addition to the capacity to utilize software and control digital equipment [16]. Digital technology can be utilized to help children learn again, according to Casey & Jones [17]. Even while cutting-edge digital technology-based video learning materials can be incorporated into the physical education process, this can be done using a game-based approach to learning [18].

Since digital literacy in physical education as a medium has a very broad application, the problem of media is currently only applicable to those forms of media that are referred to as learning media. The presence of the media will also significantly contribute to a learning process' success [19].

To improve the effectiveness of the learning process in the Health and Recreation Physical Education study program at Universitas Singaperbangsa Karawang, digital literacy in physical education is required. There should be optimization in developing and building literacy, especially physical education for learning media and boosting student interest in reading and writing. A website-based information system can support the accountability and validity of the Health and Recreation Physical Education study program. Therefore, this study aimed to analyze digital education literacy as a teaching tool for Universitas Singaperbangsa Karawang students who study online.

Instrument and Method

Research and development (R&D) reconstruction studies is a term used to describe research. The research was carried out in Karawang, Indonesia at Universitas Singaperbangsa Karawang from March to July 2021. Four hundred fourteen students (20.4±1.2 years old) and 10 lecturers in media specialist and master expert.

The answers "yes" (1) and "no" (0) are used in the master expert and media specialist observation and student assessment data on the multimedia-based draft. A scale of values can be created using information gleaned from master experts' and media

professionals' evaluations of efficacy. From "ineffective" to "highly effective," valuation can be assigned. A score of 1 indicates a useless evaluation, a score of 2 indicates a useless assessment, a score of 3 indicates a pretty effective assessment, a score of 4 indicates an effective assessment, and a score of 5 indicates a very effective assessment.

When the score is quantitatively determined, the model setup is deemed viable to be tested on a small or big scale and meets the qualifying requirements. The questionnaire data from master experts, media specialists, and athlete respondents on small- and large-scale trials were used to conduct the validity and reliability test of the multimedia-based draft. Microsoft Excel 2007 was used to carry out validity and reliability tests. The researcher's questionnaire served as the study's main tool. The initial draft of the multimedia-based is then evaluated or validated using the assembled questionnaire, which is followed by observations of the execution of small- and large-scale field trials. The ADDIE paradigm, which stands for assessment/analysis, design, production, implementation, and evaluation, is the tool used to gauge the suitability of multimedia-based applications. The steps of the ADDIE model's process are as follows, as extracted from a book multimedia-based instructional design [20] (Figure 1).
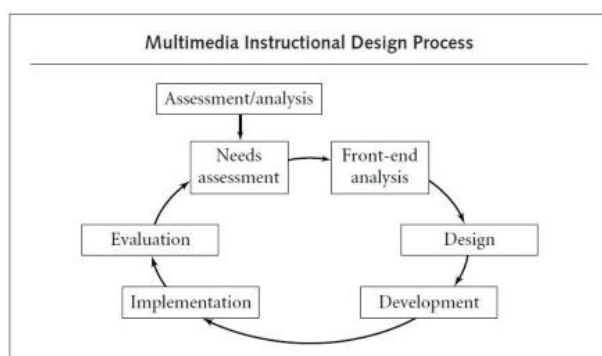

Figure 1) Design of multimedia instruction

Twelve questions from the Computer Usability Satisfaction Questionnaire made up the questionnaire [21]. Ten experts for instrument validation and three experts for product validation make up the trial subjects for the ADDIE development model. Three lecturers in the Department of Physical Education, Health, and Recreation was the expert for instrument validation in this development research, and three lecturers were technology experts. Two expert in literacy, as well as a lecturer in Indonesian language education, was asked to review the product of Physical Education Literacy development as a learning technology at Sinar Mas, along with one lecture in physical education lecturer and one expert in design and learning media.

The data collected through the use of formative evaluation were divided into 3 categories: the first stage evaluation data in the form of test results data from subject content experts, learning design experts, and learning media experts; the second stage evaluation data in the form of test results data from individual trials and field trials; and the third stage evaluation data in the form of test results data from the results of student reviews and course supervisors. In this development study project, a google form-based questionnaire was the instrument utilized to gather data. Surveys were used to gather feedback from students participating in course trials and field tests as well as topic specialists in the field of study, and experts in literacy, technology, and learning media. Processing information from professional and student reviews was done using a qualitative descriptive analysis technique. In order to carry out this data analysis technique, information from qualitative data, such as input, feedback, criticism, and improvement ideas from the questionnaire, were grouped. The outcomes of this data analysis were then used for the revision of digital literacy materials for physical education.

Findings

A needs assessment was carried out to gather information and conduct a needs analysis based on field research and literature reviews. At the Faculty of Teacher Training and Education, Universitas Singaperbangsa Karawang, 104 students studying physical education, health, and recreation participated in a field study analysis.

The 104 replies from students, with a response rate of 40%, indicating that Universitas Singaperbangsa Karawang's physical education department still has a low literacy culture.

The home page, also known as the homepage, can be reached through the home menu. When typing the website address, users will be taken directly to this page. A motivational slide shows for users to be more excited about studying was available on the homepage. Only the home page has access to this slide show; The Literacy Articles menu contains links to articles about sports and physical education; The Literacy Book Menu was a menu that lists links to articles about sports and physical education; The Data Literacy menu allows visitors to download website content so they can access and study database items offline; The Contact Us option allows users to communicate with administrators and other users to talk about database content or how to use the website itself; The Literacy Partners menu contains a list of sponsors of websites for literacy in physical education; The repository menu was a menu for keeping student research or articles about sports and physical education; The Literacy Video

option contains video displays linked to physical education and sports, including instructional videos and videos of student activities.

The outcomes of the previous design process were materialized in practical form during this step. In this study, the created design was integrated into the web form, with all of its components—graphics, videos, and the web section itself—included. A few of the activities done to produce media were the ones listed in Figure 2.
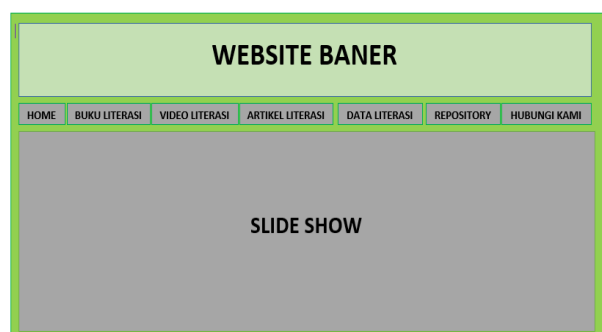

Figure 2) Digital Literacy Physical Education Website Design, Universitas Singaperbangsa Karawang

Web-based media was employed, and there was content there in the form of text, photographs, and video tutorials. To get started, developers compile. Then gather media connected to the subject, such as images and graphics. One of the supporting elements in this media was a video that the researcher also created.

Developers put media into practice by starting with installation, configuring/managing, and seeking components or extensions required to suit media needs including downloading capabilities, commenting tools, and storage fields.

The outcomes of the previous design process were materialized in practical form during this step. In this study, the created design was integrated into the web form, with all of its components—graphics, videos, and the web section itself—included. This was how to access the website: to begin using this website: Launch Google by typing http://literasi-unsika-pe.com/ into the address bar; Next, either click the browser's Go button or hit Enter on the keyboard; The website for physical education literacy will display its home page (Figure 3).

Figure 3) Universitas Singaperbangsa Karawang's website for digital literacy in physical education

The evaluation of the "Physical Education Literacy Website," a product that has been produced, yields favorable findings. The appendix contains some of the product displays that have been updated based on input from material experts, media experts, and the testing stage. Dissemination was done after the final product has been created. Based on a needs analysis, a website for educational literacy has been created to aid instructors and students in their academic endeavors. This was in line with the findings of questionnaires distributed during field research that showed a significant correlation between activity process factors, HR factors, and environmental factors when it comes to using physical education digital literacy as a website-based teaching tool for students at Universitas Singaperbangsa Karawang.

The program operations, menu designs, and expert assessments make up the design. By submitting a program design along with an assessment sheet with a value scale that includes comments, ideas, and modifications from experts, the expert assessment was carried out. The evaluation's findings were presented as a value scale for the website's media elements and material concept truthfulness, which was created using a Likert scale with a choice of five categories.

According to findings, 90% of the material experts' assessments fall into the "extremely appropriate" category, and 88.57% of the media experts' assessments fall into the "very feasible" group. This demonstrates that the program's evaluation by the two experts was quite accurate.

When it has been determined that it was viable by media experts and material specialists, beta testing on learning media was conducted. Students from Universitas Singaperbangsa Karawang's Physical Education, Health, and Recreation will do beta testing. Students tested products by using the tested media, then filled out questionnaires about their experiences. The outcomes of student product trials were listed in Table 1.

Table 1) Data from the respondent

Items	Agree	Disagree	Total
1	1764	5	1769
2	1785	16	1801
3	1724	10	1734
4	1746	10	1756
5	1674	8	1682
6	1718	20	1738
7	1723	16	1739
8	1692	30	1722
9	1710	28	1738
10	1760	3	1763
11	1720	10	1730
12	1728	8	1736

The findings of the 12-question student assessment of online media yielded a score of 20908 out of 24840 or 84.17%. It falls under the "Very Eligible" category according to eligibility classification (Table 1). This leads to the conclusion that the media

contained in the database material for physical education, health, and recreation at Universitas Singaperbangsa Karawang was very practical and suitable for use as a learning tool.

Discussion

According to Wahono [22], various components go into evaluating the viability of learning media, including aspects of software engineering, aspects of learning design, and aspects of visual communication. Unit testing, integration testing, system testing, and acceptance testing are the four steps of the feasibility test stages in the software engineering aspect, which are divided from the software testing strategy by Pressman [23]. During development, unit testing is done by experimenting with different media. The draft must be converted into a website program for physical education literacy once it has been determined that it is possible to develop. The design stage is when the framework for the product is put together and connected to its functionality. Several components and pages make up the physical education literacy website product, including the menu page, literacy data page, literacy article page, literacy video page, literacy book page, repository page, and contact us page. The product is now submitted for media expert reviews, material expert opinions, and changes. Each product page is described as follows: How to access the website (1) Launch Google by typing http://literasi-unsika-pe.com/ into the address bar, (2) Next, click the button or hit Enter on the keyboard. Open a browser. (3) The website for physical education literacy will display its home page. The website guide and the Physical Education literacy website guidebook have been created during the assessment and trial stages, namely the validation of material experts and media experts, and are intended to be used as a guide for lecturers and students.

Confirmation between theoretical studies and the gathered research findings led to the discussion of the end product study of website construction together with the physical education literacy website handbook. The evaluation of the final product, a "physical education literacy website," yields encouraging findings. A few product displays that were revised by media and material experts. Based on a requirements analysis, a website for physical education literacy will assist students in finding information and resources about physical education. This is consistent with the findings of 21 questions about the literacy culture of physical education that was distributed to 104 students in the physical education study program environment, health, and recreation. The results showed that respondents from students had a percentage of 40%, leading to the conclusion that the literacy culture of physical education is insufficient. At the University of Singapore, physical education is still not very

strong. so that a website dedicated to literacy in physical education might be developed in the future. A website for physical literacy was created using this data. This program's creation resulted in a tool that may be used by professors and students to locate data, references, and information quickly, precisely, and effectively. So that it will aid in the teaching and learning process for professors and students. Additionally, findings of a study and development in the form of multimedia shows that it can make the job easier [24]. The menus below are created using this website program: (1) The Home menu will take you to the main page, often known as the Home page. (2) A menu with article references is called the Literacy Articles menu. (3) The Literacy Books menu is a reference book menu. (4) Download the Data Literacy menu. (5) Users can communicate with administrators and other users through the Contact Us menu. (6) The Literacy Partners menu contains a list of supporters of the website. (7) Student papers or scientific works can be kept in the Repository menu. (8) A video can be viewed on the Literacy Video menu. Expert evaluation, changes, testing, and development of the "Physical Education Literacy Website" led to the conclusion that it was appropriate for usage.

Conclusion

The stages for creating a physical education literacy website start with the following, according to the findings of the analysis of the assessment data of specialists, lecturers, and students: Conducting research investigations and obtaining data, creating prototype designs, Validation and correction by experts, Miniature field tests and product updates, Vast field tests, and finished goods. There are multiple main menus on the physical education literacy website, including home, literacy articles, literacy books, literacy data, literacy partners, literacy videos, repositories, and contact us. Teachers and students can both use the built website for physical literacy. This is demonstrated by the large-scale test findings, which place the presentation aspect at 86.25% in the very good category, the content and material aspect at 82.5% in the very good category, and the usage aspect at 84.7%. into the category of extremely good. It is envisaged that the Physical Education Literacy Website would offer advantages and recommendations from many parties based on the findings of the research that went into its development: This "Physical Education Literacy Website" can serve as a guide for future scholars. More comprehensive materials can be added to this website for physical education literacy.

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