

Preliminary Research Science and Islam Interactive Multimedia Based on Discovery Learning for Digital Era

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Abstract: The purpose of this study is to explain the preliminary research stage that was conducted at Jambi City Elementary School as preliminary data for research on the development of scientific and Islamic interactive multimedia based on discovery learning for digital era. The descriptive technique utilized in this study explains the preliminary research stage of the PLOMP development model. Interview guidelines and student digital literacy surveys were utilized as study instruments. According to the findings of the investigation, pupils' digital literacy was in the good category, with percentages ranging between 62% and 65%. This implies that students can keep up with technical advancements in digital-era learning. This is an opportunity to create an ICT-based multimedia. This study will create scientific and Islamic interactive multimedia based on discovery learning to promote learning in the digital age while also exposing scientific principles and truths that are believed to exist in Islam.

Keywords: Discovery Learning, Digital Literacy, Interactive Multimedia

A. Introduction

The development of information and communication technology in the 21st century has had a major impact on the world of education. 21st Century Education is centered on equality and access to education that must provide experiences that are relevant to the 21st Century World (Amaliah et al., 2023). The immediate challenge for the 21st Century, which is also the digital era, is to be able to integrate technology into learning so that students are able to have skills, knowledge, and abilities in the fields of technology, media and information, learning skills, innovation, and life skills (Sajidan et al., 2018). Therefore, students are required to master life skills which are then associated with technology. These life skills include basic skills (basic literacy), competence, and character (Amran et al., 2020).

Attention to literacy in Indonesia began when the Minister of Education and Culture issued Permendikbud Number 23 of 2015, Indonesia must be able to develop a literacy culture as a prerequisite for 21st century life skills through basic literacy (Amran et al., 2020). The six basic literacy includes literacy, numeracy, science literacy, digital literacy, financial literacy, and cultural and citizenship literacy. According to Fitriyani & Nugroho (2022), there are several reasons for the importance of instilling literacy in elementary schools, namely 1) Literacy greatly supports one's success in dealing with various problems. 2) Through literacy skills, a person not only gains knowledge but can also document a piece of experience that becomes a reference in the future. 3) Literacy culture has many benefits including increasing vocabulary, optimizing brain work, adding new insights and information, improving interpersonal skills, sharpening oneself in capturing the meaning of information being read, developing verbal skills, training thinking and analyzing abilities, improve one's focus and concentration, train in terms of writing and stringing meaningful words.

The cultivation of digital literacy in elementary schools must be supported by the world of education. For this reason, the role of education is expected to be able to instill, increase competition in the global era, the digital era and the rapid development of information technology (Umayah & Riwanto, 2020). The application of digital learning can support the development of digitally literate students to be able to learn and work creatively by utilizing technology in all aspects of their lives (McGuinness & Fulton, 2019). The learning environment created depends on how they adapt to the digital world. The definition that describes digital in general is the awareness, attitude and ability of individuals to make good use of digital tools and facilities to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, build new knowledge, express with media, and communicate with other people, in certain contexts in life situations, allows constructive social activity, and to reflect on processes (Darlis & Kurnia Sari, 2021; Rahmi et al., 2022). Therefore, digital literacy is very important to be implemented in learning activities by encouraging students to use digital devices as a place to learn.

Digital literacy is identified as a goal of formal education, which allows us to match the media used according to the material presented and the level of students being taught (Lankshear & Knobel, 2015). The digitalization of technology in the world of education has caused many changes in learning activities starting from learning models, learning resources, and learning media that are increasingly varied (Anggraeni et al., 2019; Warsita, 2017). Learning media has an important role in the learning process because it can assist teachers in enriching students' knowledge (Ediyani et al., 2020). In addition, the use of media can make learning more effective so that students can learn about concepts that are abstract and difficult to understand (Nabila et al., 2020).

So that students can better understand abstract concepts, we need a media that is arranged based on the steps of a learning model. The learning model that can be used is the discovery learning model. This model is a model that involves students learning actively by uncovering or discovering concepts or principles themselves in the learning process.

The discovery learning model can be used in online learning accompanied by web-based media and can involve students actively and learning becomes more effective (Yuszahra et al., 2020). This research is also supported by research (Hartati & Widya Ulfa, 2022) that the discovery learning learning model has an influence on students' digital literacy. With discovery learning-based multimedia, it is expected to be able to support students' digital literacy in learning in the current digital era. This model centers on students providing opportunities for them and the teacher to participate as a learning partner in examining ideas, especially in discovery situations where the answers are unknown (Herliana Inde et al., 2020).

The results of the information obtained from articles related to learning media, it is stated that the learning that takes place is still less innovative in the use of learning media, especially those related to technology (Diah Masturah et al., 2018; Oktaviana & Ramadhani, 2023; Prasetyo, 2017). Many researchers have developed learning multimedia, but no researchers have developed interactive science and Islamic learning multimedia based on discovery learning models. By integrating science and technology with Islam, it is hoped that the learning process will become more meaningful and easier to understand. This, in turn, can help in conveying, introducing, instilling belief in, and promoting the practice of Islamic teachings through educational activities. Therefore, researchers will develop an interactive multimedia science and Islam based on discovery learning learning models. This research is different from previous research studies, namely research conducted to develop multimedia in general based on learning models while this research develops interactive multimedia science and Islam based on discovery learning where no research has been published before regarding the development of interactive multimedia.

The results of the Bibliometric analysis used the Publish or Perish application edition 8.8.4275.8412 and Vosviewer to find research topics that have been little researched during the last 6 years (2017-2022). It can be said that research with interactive multimedia topics is an issue that has been widely researched with the application of variables different for the subject, learning model, application, and research sample. The researcher concluded that for research on the development of scientific and Islamic interactive multimedia based on discovery learning there has been no published research.

Based on the presentation of research data conducted by previous researchers, and the results of initial research on location regarding learning in schools as described, it is important and urgent for researchers to conduct research related to the development of interactive multimedia science and Islam based on discovery learning. It is important because science and Islam are inseparable parts whose material must be taught in the learning curriculum in elementary schools so that students starting from elementary school have been introduced to the concepts of science and truths that are believed to exist in Islam. Urgent, because the current era is a digital era where learning requires digital-based learning, the characteristics of 21st Century learning require creativity, critical thinking, extensive communication between students and teachers, and learning that is collaborative in nature, then on the principle of the importance of something urgent that research this is done.

This research develops an interactive learning multimedia of science and Islam through the use of technology based on discovery learning models. The aim is to support educators so that they are able to develop students' knowledge accompanied by the development of digital literacy skills and increase their insight and obedience to God through science and Islam. In addition, this interactive multimedia is expected to be able to overcome teachers' difficulties in managing space and time in the learning process.

B. Methods

The method used in this study is a descriptive method that describes the preliminary research stage of the PLOMP development model, the product to be produced is in the form of scientific and Islamic interactive multimedia based on a valid, practical and effective discovery learning model. The subjects of this research were two teachers and grade VI elementary school students in Jambi City. The research instruments used were interview guidelines and student digital literacy questionnaires. The procedures for the activities carried out in this study are shown in table 1.

Table 1. Preliminary Research Activity Procedures

Activity Description	Research Analysis
Needs and context analysis	Knowing the fundamental problems of integrated thematic learning for class VI Elementary School. Analyze the learning model that has been used by the teacher

Table 1. (Continued)

Activity Description	Research Analysis
Study of literature	need for scientific and Islamic interactive multimedia based on discovery learning models. Look for sources and supporting references related to research activities
Conceptual framework development	Designing a conceptual framework and theoretical framework for scientific and Islamic interactive multimedia based on the discovery learning model.

C. Results and Discussion

This research was only conducted at the preliminary research stage for integrated thematic learning for class VI Elementary School with the Plomp development procedure. The following will describe some of the things found in the field based on the results of observations made during the field study activities. The stages of this preliminary research can be seen as follows.

Needs and context analysis

Needs and context analysis was carried out to obtain valid data regarding teacher problems in applying the discovery learning model, teacher problems in integrating learning with science and Islam, and teacher problems when using ICT in learning. In addition, through needs analysis also obtained a temporary description of the product to be developed. This stage is carried out by conducting interviews with teachers and distributing questionnaires to students to find out their initial digital literacy skills.

Based on the results of interviews conducted at School 1 Jambi City, information was obtained that students had never used interactive multimedia in thematic learning. The media used by students in learning is only limited to projectors and teaching aids. This is due to the limited time the teacher has to use various learning media. In addition, it is known that teachers have tried to use the discovery learning model in learning, but are constrained by the time when implementing it and the lack of students' reasoning about the media used by the teacher.

Similar to this, the learning media at School 2 Jambi City also only use visual aids. The teacher only uses visual aids because of the limited space the school has to use

other learning media such as projectors. The condition of teaching aids in school 2 is also that many are not suitable for use, so the teacher really agrees if there is a learning media that can support the learning process in order to save time, money, and also not be hindered by the limitations of the classroom.

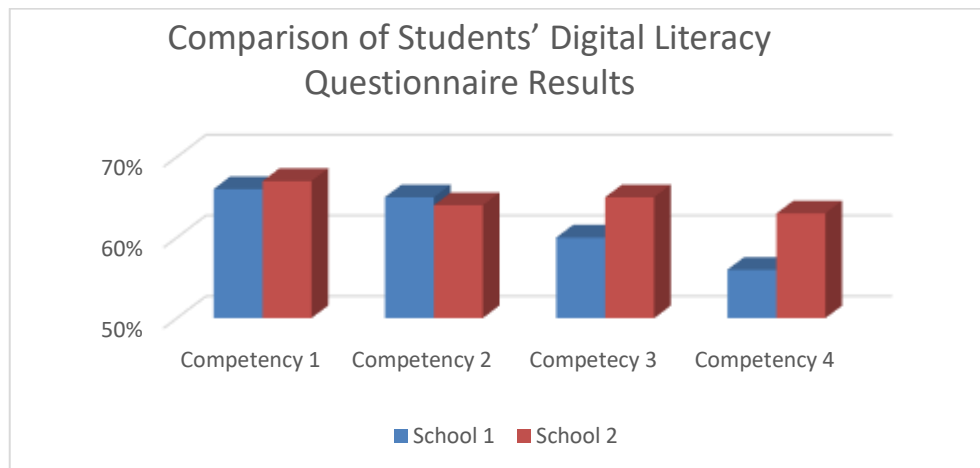


Figure 1. Comparison of Students' Digital Literacy Questionnaire Results

Furthermore, based on the results of the digital literacy questionnaire analysis of students at School 1 Jambi city, the first competency, the ability to search the internet (internet searching), obtained a percentage of 66%, the second competency, the ability to use hypertextual navigation, obtained a percentage of 65 %, the third competency, the ability to evaluate information content (Content Evaluation), obtains a percentage of 60%, and the fourth competency, the ability to compile knowledge (Knowledge Assembly), obtains a percentage of 56%. Overall, it can be concluded that the percentage of students' digital literacy in School 1 Jambi city is 62%.

Based on the results of the digital literacy questionnaire analysis of students at School 2 Jambi city, the first competency, the ability to search the internet (internet e-searching) obtained a percentage of 67%, the second competency, the ability to use hypertext navigation (hypertextual navigation) obtained a percentage of 64%, the third competency, the ability to evaluate information content (Content Evaluation), obtains a percentage of 65%, and the fourth competency, the ability to compile knowledge (Knowledge Assembly), obtains a percentage of 63%. Overall, it can be concluded that the percentage of students' digital literacy in School 2 Jambi city is 65%.

The percentage of students' digital literacy obtained above shows that students' digital literacy abilities are in the good category. This is based on the interpretation of the Likert scale which shows that in the range of 61% -80%. It is in the good

category. With good digital student percentage results, it means that students are able to follow technological developments in learning. This is an opportunity for the development of ICT-based interactive multimedia as a support so that educators are able to develop students' knowledge accompanied by developing digital literacy skills and increasing their insight and obedience to God through science and Islam. In addition, this interactive multimedia is expected to be able to overcome teachers' difficulties in managing space and time in the learning process.

Study of Literature

Interactive Multimedia

The term multimedia is etymologically derived from the words multi and media. Multi means many or plural and media means means of conveying messages or information such as text, images, sound and video. So, in language the term multimedia is a combination of many or several media such as text, images, sound, video that are used to convey messages or information. The terminological definition of multimedia is a combination of various media such as text, sound, images, animation, video, and others in an integrated and synergistic manner through a computer or other electronic equipment to achieve certain goals. The words synergistic and integrated indicate that multimedia components must be integrated and integrated with each other, must synergistically support each other to achieve certain goals (Herman Dwi Surjono, 2017). While the term interactive is the ability of two-way communication or feedback (Primamukti & Farozin, 2018).

In the essay book, Mayers (2009), it is stated that there are two purposes of using multimedia, namely understanding and remembering. One of the learning media for students that offers direct virtual experience is interactive multimedia, a learning media designed for independent learning, creating a fun learning environment and motivating students in the classroom (Assyura et al., 2023). To accommodate the diversity of student learning styles, a teacher can combine them through multimedia (Elviana et al., 2020). Interactive multimedia will enable students to study independently (Dhanil & Mufit, 2021).

Digital Literacy

According to Nascimbeni & Vosloo (2019), digital literacy is the awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, construct new knowledge, create media expression and communicate with others, in the context of certain life situations, to enable constructive social action, and to reflect on this process. Meanwhile according to Naufal (2021), Digital literacy is a form of ability to obtain, understand and use information that comes from various

sources in digital form and the development of ways of thinking that are rooted in computer literacy and information literacy.

Digital literacy is one type of literacy needed in 21st century learning. digital literacy emphasizes the process of critical thinking when dealing with digital media rather than technical competence as a core skill in digital literacy, which will lead him to become someone who is good at managing information and digital technology (Rini et al., 2022). In Muyasaroh et al (2021), there are 4 digital literacy competencies, namely internet searching, hypertextual navigation, content evaluation, and knowledge assembly.

Discovery Learning

Learning model of discovery learning according to (van Joolingen, 1999), is a promising model for several reasons, the most important of which is student activeness in learning engagement which will produce a structured knowledge base, because students construct their own knowledge by experimenting and concluding the results of these experiments. (Svinicki, 1998) revealed that in the learning process, students are not empty vessels that must be filled by the instructor, but must involve the active participation of these students to be able to solve problems based on prior knowledge rather than the knowledge of others. In finding concepts, students make observations, classify, make conjectures, explain, and draw conclusions to find some concepts or principles (Nelyza et al., 2015).

Discovery learning focuses on the ability to solve something that is relevant to the development of the current situation which is required to think of solutions to problems that occur in the midst of society (Nurchahyo et al., 2018). Discovery learning involves mental processes so that students are able to assimilate a concept or principle, so that discovery learning occurs when individuals are involved primarily in using their mental processes to discover fun concepts and principles that require students to be active, creative.

Conceptual Framework Development

The conceptual framework is a link between theories or concepts that support research that is used as a guide in preparing research. Based on needs and context analysis, analyzing theories and concepts related to the model, it can be concluded that interactive multimedia science and Islam are relevant to the discovery learning model for elementary school digital era learning. The conceptual development framework can be seen in Figure 2.

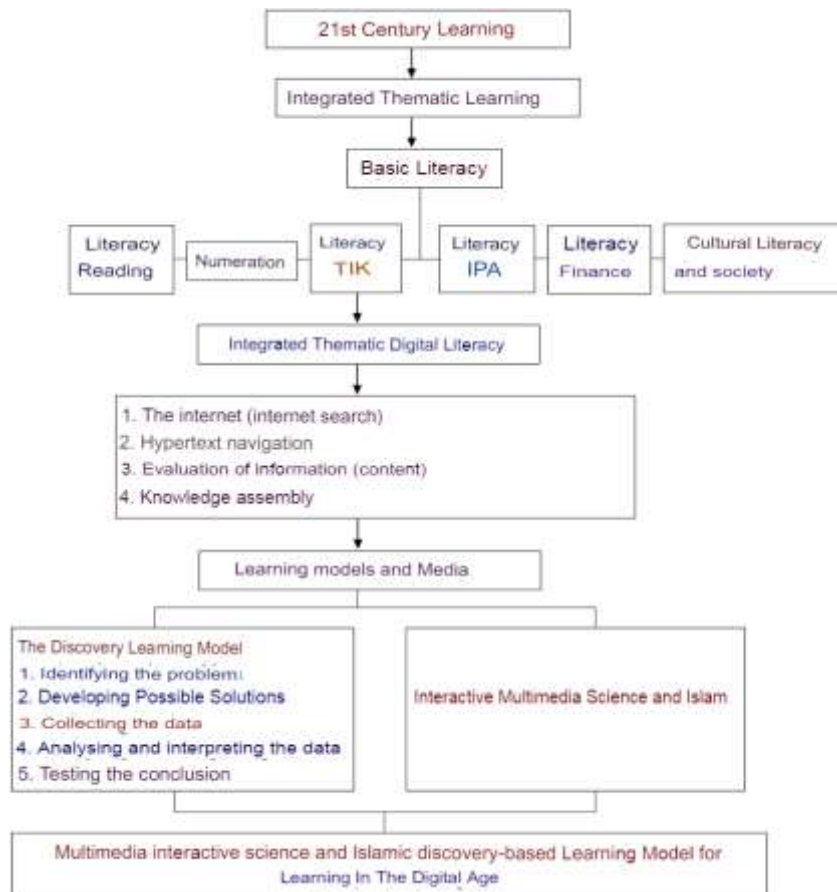


Figure 2. Conceptual Framework Development

D. Conclusion

Based on the results of data analysis, it was found that students' digital literacy was in the good category with a percentage of 62% in school 1 and 65% in school 2. This means that students are already able to keep up with technological developments in digital era learning. This is an opportunity for the development of an ICT-based interactive multimedia as a support so that educators are able to develop students' knowledge accompanied by the development of digital literacy skills and increase their insight and obedience to God through science and Islam. In addition, this interactive multimedia is expected to be able to overcome teachers' difficulties in managing space and time in the learning process.

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