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The Use of Digital Pocketbooks to Support Merdeka Curriculum in Physics Learning: Literature Review

Shalsa Billa Ardhana Neswary
State University of Surabaya, Indonesia, *shalsaba4@gmail.com*

Binar Kurnia Prahani
State University of Surabaya, Indonesia, *binarprahani@unesa.ac.id*

The merdeka curriculum is a curriculum whose learning structure is divided into two main activities, namely learning that refers to student learning outcomes in each subject and projects to strengthen the Pancasila student profile. A digital pocketbook is an electronic book that contains information in the form of text or images that can be displayed on a digital screen. This study aims to analyze the use of digital pocket books to support the implementation of the merdeka curriculum in physics learning. This study uses a literature study research method by reviewing 30 articles that can be accounted for on the use of digital pocket books to support the implementation of the merdeka curriculum in physics learning. The results of the study found that 1) The use of digital pocket books was declared effective in learning physics. 2) The advantage of using digital pocketbooks to support the merdeka curriculum in physics learning is that it can improve students' understanding of concepts, problem solving, and cognitive outcomes. 3) The weakness of using digital pocketbooks is that digital pocketbooks are enough to drain smartphone memory.

Keywords: digital pocketbooks, merdeka curriculum, physics learning, digital learning, literature review

INTRODUCTION

Education is one of the most critical aspects for a nation, country, and society, especially in developing countries. Indonesia is a developing country, so education is essential for Indonesia (Telaumbanua, 2022). The role of education in development which is currently growing, especially in Indonesia, is significant because it has relevance in producing skilled human beings to participate in development success (Rahmawati et al., 2022). Education is an investment in developing human resources that aim to improve human abilities and skills (Tabroni & Bumi, 2022). In addition, education is a conscious effort to create a learning atmosphere and learning process to actively develop students' potential (Ikhwan et al., 2020). The government designs education to educate and advance the nation so that education is considered one of the main instruments in developing human resources whose implementation can be carried out democratically (Aspi, 2022). With education, it can be an effort for a person to know his potential, education in Indonesia always experiences curriculum changes that adjust to circumstances so that students and educators must always adjust (Marisa, 2021).

Learning is an essential aspect of education. Learning is an effort that involves the knowledge that the teacher has to achieve curriculum goals (Nafrin & Hudaidah, 2021). Applying learning principles to learning the new paradigm by designing learning that focuses on student needs and characteristics (Arifin & Al Anshori, 2021). Physics is one of the branches of natural science, where physics is a process of understanding a natural phenomenon (Ilhamsyah & Bektiarso, 2022). The natural

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phenomena contained are expressed in the form of concepts, theories, and laws so that they can be understood easily by the human mind (Busyairi et al., 2021). Physics can decipher and analyze structures and events that exist in the universe (Amin & Sulistiyono, 2021). The first thing required in learning physics is a person's ability to understand concepts, principles, and laws (Fuadi & Asriyadin, 2022). Learning physics is one of the lessons most avoided by students (Rahmawati et al., 2022). In physics education, students are still less active in the learning process, so students do not participate in finding a problem and relevant solutions per the physics material (Rifyal et al., 2022). Physics is still a subject that is considered difficult by students and requires an extra mind to understand and study it well (Ady, 2022). This is due to the lack of variation in learning media used by teachers during the teaching and learning process (Dasmo et al., 2020).

The merdeka curriculum is a new curriculum that will begin to be implemented gradually starting in 2022. The implementation of independent learning can give schools the responsibility to improve learning outcomes referring to the standard learning process and principles and independent learning assessment (Kusyanti, 2022). The merdeka curriculum is a curriculum where the learning structure is divided into two main activities, namely learning, which refers to the learning outcomes of students in each subject, and the project of strengthening the profile of Pancasila students, which refers to the competency standards of graduates, that students must have (Hamdi et al., 2022). Freedom of learning, which means freedom in learning, provides opportunities for students to learn freely, calmly, relaxed, and happily (Abidah et al., 2020). The concept of this curriculum brings direction to contribute generously in demanding economic improvement for students so they can learn freely. The merdeka curriculum requires educators to be more creative and innovative in the selection of learning models and media. Therefore, educators need to think of ways so that learning can be carried out well and interestingly so that it is not confusing for students (Marisa, 2021).

In today's digital era, many challenges must be faced by all aspects of human life. Information technology in the current era has rapidly developed (Rachmat et al., 2021). Global demands require the world of education to adjust technological developments to improve the quality of education, the use of wrong learning media can make learning uninteresting and boring (Rahmawati et al., 2022). In the past year or so, many concepts have experimented with using mobile phones in education. Learning that puts students' skills first can be developed using mobile phones (Hochberg et al., 2018). The role of learning media in teaching and learning activities is inseparable unity from the world of education (Ikhbal & Musril, 2020). Learning media can convey the sender's message to the recipient to stimulate students' thoughts, feelings, attention, and interest in learning (Tafonao, 2018). So, it can be known that learning media is a tool that explains some explanations in learning as a whole that is difficult to explain verbally (D. P. Putra, 2021). The pocketbook is a replica of a module with a small size that has a level of practicality because it can be stored in a bag so that it is easy to use anywhere and anytime (Cahyono et al., 2018). Using existing technology, pocketbooks can be used more quickly because they are easier to carry everywhere and become an alternative to learning, making them more exciting and innovative (Haque & Kurniawan, 2021). With digital pocketbooks, students can use them to study anywhere, be more flexible, and save time (Darmaji et al., 2019).

Based on the background above, the authors are interested in analyzing the use of digital pocket books as learning media in physics learning to make it more attractive to students as well as to support the merdeka curriculum.

METHOD

This study is of a qualitative type using literature studies. In qualitative research, a literature review must be used consistently (Ali et al., 2022). A literature study is a type of research that looks for a reference relevant to a research topic (Qorimah & Sutama, 2022). The literature study in question is that the researcher looks for references and collects literacy related to research about the use of digital

pocketbooks in physics learning (Widiyatun, 2021). This research is based on previous research (Millenia & Sunarti, 2022). This study reviewed 30 articles or journals about the use of digital pocketbooks in physics learning and published in the 2018-2022 period obtained from national journals from trusted and accountable websites, namely Google Scholar with a SINTA reputation and several international journals. After obtaining relevant data and the research, the data will be analyzed and presented in the results and discussion so that a conclusion can be made (Wulandari & Nana, 2021). The research flow used in this study will be shown in Figure 1.

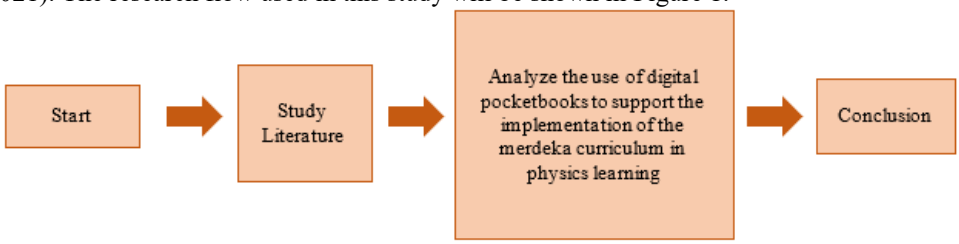

Figure 1
Research flow

Figure 1 explaining the first flow is to find ideas that will be used for research, then look for 30 scientific articles from national journals and international journals that discuss the use of digital pocketbooks in physics learning to support the merdeka curriculum. Data is collected and created tables containing authors, purpose, and results. The next step is to analyze the articles obtained, and the last step is to conclude from the results that have been analyzed.

FINDINGS

A summary of the research results on using digital pocketbooks to support the implementation of an independent curriculum in physics learning for the 2018-2022 period is presented in Table 1.

Table 1
Research result related to the use of digital pocketbooks in physics learning to support the implementasion of an merdeka curriculum

No.	Author	Purpose	Result
1.	(Agustina *et al*., 2022)	Developing learning media in the form of physics pocketbooks charged with local wisdom.	Developing a locally charged physics pocketbook is valid and can innovate learning.
2.	(Ahmad & Hartono, 2020)	Knowing the characteristics, feasibility, and effectiveness analysis of pocket book physics.	Physics pocketbooks are considered feasible and can improve students' understanding of concepts.
3.	(Anita *et al*., 2021)	Develop STEM-based digital pocketbooks on students' problem-solving skills.	Using STEM-based digital pocketbooks is feasible and attractive to improve students' problem-solving skills, but it is less effective when used online.
4.	(Damayanti et.al, 2018)	Knowing the feasibility of physical learning media in the form of android-based pocketbooks on static fluid materials.	Android-based physics pocketbooks are worth using as a learning medium.
5.	(Fatmi & Hadiya, 2020)	Knowing the quality of the generic science skills-based environmental physics pocketbook developed in terms of students' interest in learning.	The use of pocketbooks can significantly increase students' interest in learning.
6.	(Hardila *et al*., 2021)	Describes the process of developing an android-based physics learning application on class X straight-motion material.	Android-based physics learning applications are valid and practical for learning media.
7.	(Hasannah & Kustijono, 2019)	Knowing mobile pocketbook media's effectiveness in training students' critical thinking skills.	Using mobile pocketbooks is effective for training students' critical thinking skills.
8.	(Ibisono *et al*., 2020)	Describing the effectiveness of augmented reality-based pocketbooks to improve the learning achievement of high school students.	Augmented reality-based pocketbooks are declared effective and can improve the learning achievement of high school students.
9.	(Iman & Hikmawati, 2022)	Testing the effect of the learning cycle 7E model assisted by physics pocketbooks on students' critical thinking skills.	A learning cycle 7E model assisted by a physics pocketbook can improve students' critical thinking skills.
10.	(Khumaidi & Sucahyo, 2018)	Describing the feasibility of the physics mobile pocket book as an android-based learning medium on momentum and impulse materials.	The use of mobile pocketbook physics is declared effective for use in learning momentum and impulse materials.
11.	(Komarudin *et al*., 2021)	Develop and know the feasibility, student response, and effectiveness of STEM-based digital pocketbooks.	Using STEM-based digital pocketbooks has proven effective in improving student's understanding of concepts.
12.	(Larasyati *et al*., 2020)	Knowing the feasibility of android-based learning media developed and student learning outcomes.	The use of android-based learning media can improve student learning outcomes.
13.	(Mikraj *et al*., 2019)	Knowing the effect of pocketbook-shaped physics bulletins on improving the learning outcomes of class X students.	Using a physics bulletin as a pocketbook can improve the learning outcomes of grade X students.
14.	(Mirnawati *et al*., 2021)	Producing learning media in pocketbooks by testing the validity of cognitive config-based pocketbooks and their devices.	Pocketbook learning media based on cognitive conflict approaches and learning tools on pressure materials are effective.
15.	(Hafi & Supardiyono,	Describing the feasibility of a physics pocketbook with android-based augmented	Physics pocketbooks with android-based augmented reality technology on

No.	Author	Purpose	Result
	2018)	reality technology on global warming material.	global warming materials can improve student learning outcomes.
16.	(Noviatika *et al*., 2019)	Knowing the influence of problem-based learning models assisted by mobile pocketbook physics on students' problem-solving ability.	Problem-based learning models assisted by mobile pocketbook physics can improve problem-solving skills.
17.	(Perdana *et al*., 2019)	Get learning media in the form of an android pocketbook application on static electricity material.	The pocketbook android application is declared feasible and effective in learning.
18.	(Robiyanto & Dwikoranto, 2019)	Describe the feasibility of using pocketbook learning media on mechanical wave materials.	Pocketbook learning media on mechanical wave material effectively trains students' science literacy.
19.	(Sari *et al*., 2019)	Describing the validity of using an android-based mobile pocket book using adobe flash on temperature and heat materials.	Using android-based pocketbooks using adobe flash on temperature and heat materials is feasible in the learning process.
20.	(Wati & Bukit, 2019)	Knowing the effect of pocket book-assisted inquiry learning models on students' understanding of concepts.	Pocket book-assisted inquiry learning models can improve students' understanding of concepts.
21.	(Wulandari et al., 2022)	Developing android-based pocketbook teaching materials on light properties materials.	The use of android-based pocketbook teaching materials on materials on the properties of light is declared effective.
22.	(Yanti *et al*., 2022)	Designing a digital-based physics pocketbook with a short calculation method.	The use of digital-based physics pocketbooks is declared valid and effective in learning.
23.	(Bakri, Putri, *et al*., 2021)	Produce a concise book to study physics.	Pocketbooks are declared worthy as a medium for learning physics.
24.	(Bakri, Yuniar, *et al*., 2021)	Describe the results of a QR-Code-based pocketbook.	QR-Code-based pocketbooks are declared suitable for use in physics learning.
25.	(Bani & Masruddin, 2021)	Developing android-based physics pocketbook learning media.	Android-based physics pocketbooks improve students' cognitive outcomes.
26.	(Kholiq, 2020)	Describe the feasibility of BDF-AR2 media.	Pocketbooks are suitable for physics learning and can improve students' science literacy skills.
27.	(Mulhayatiah *et al*., 2019)	Knowing the feasibility of learning and improving problem solving using a pocketbook.	Using android-based pocketbooks can improve students' problem-solving skills with visual tools.
28.	(Rahmandita *et al*., 2021)	Knowing the effectiveness of pocketbooks in Newtonian materials.	Pocketbooks are feasible for studying the physics of newton's raw material.
29.	(Suprapto *et al*., 2021)	Developed an augmented reality-based pocketbook on planetary motion.	The use of augmented reality-based pocketbooks is stated to be effective in improving student learning achievement in learning planetary motion matter physics.
30.	(Putra et al., 2021)	Describing the design of pocketbook learning media and knowing the feasibility of pocketbooks on thermodynamic materials.	Pocketbooks are declared effective and can be used in physics learning.

Table 1 can be seen that the use of digital pocketbooks is effectively used in expert physics learning to make it easier for students to understand concepts. The use of digital pocket books makes participants feel happy and not bored following physics learning. The use of digital pocketbooks can improve cognitive outcomes and can improve learners' critical thinking skills. In addition, the use of digital pocket books is suitable for use in physics learning so that it can improve students' science literacy skills. The use of digital pocket books in physics learning is said to be more practical because it can be used anywhere and anytime.

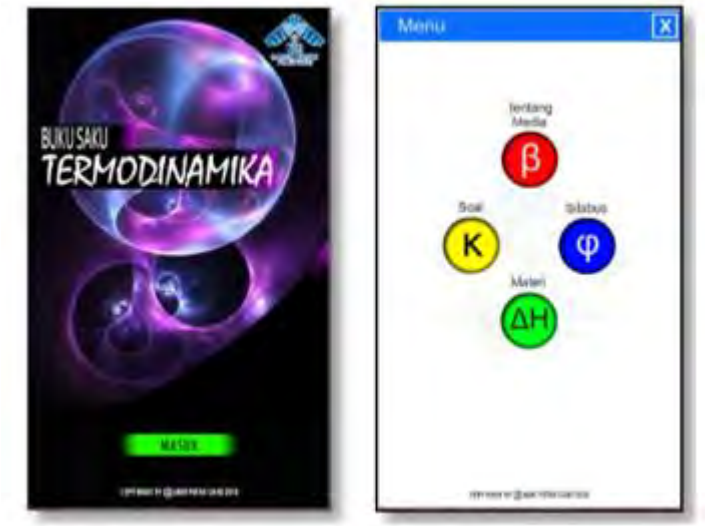

Figure 2
Thermodynamics digital pocket

Figure 2 shows a pocketbook in the learning of thermodynamic matter physics. Using digital pocketbooks of thermodynamic materials got good results and was declared effective in physics learning (Sairi, 2018). Currently there is a lot of discussion about the use of smartphones as a learning medium in a learning. This makes learning more innovative and more interesting so as not to make students feel bored.

DISCUSSION

Digital Pocket Book Definition

The pocketbook is a replica of a module with a small size that has a level of practicality because it can be stored in a bag so that it is easy to use anywhere and anytime (Cahyono et al., 2018). Pocketbooks are small books that can be stored in a pocket and easily carried everywhere. Learning pocketbooks are teaching materials arranged systematically and interestingly with material content, methods, and evaluations that can be used independently (Yani et al., 2021). A digital pocket book is an electronic book containing information in the form of text or images that can be shown on a digital screen and easily carried everywhere (Sholeh et al., 2021). With digital pocketbooks, students can use them to study anywhere, be more flexible, and save time (Darmaji et al., 2019). The digital pocketbook is aimed at all mobile phones with android platforms where the android operating system is the most widely used operating system (Handayani et al., 2018).

Merdeka Curriculum

Merdeka curriculum is a curriculum where the learning structure is divided into two main activities, namely learning, which refers to the learning outcomes of students in each subject, and the project of strengthening the profile of Pancasila students, which refers to the competency standards of graduates, that students must have (Hamdi et al., 2022). Merdeka Belajar is a breakthrough policy published by the Minister of Education Nadiem Makarim, which aims to restore the authority of managing the education of school principals and local governments. The policy of independent learning exists because of a desire to make Indonesia a smart, just, wise, and wise country (Hutabarat et al., 2022). The concept of independent learning implemented by Nadiem Makarim was encouraged because he wanted to create a happy learning atmosphere without being burdened with the achievement of specific scores or grades (Hasim, 2020). The hallmark of the merdeka curriculum is three inseparable learning activities, namely extracurricular activities, projects to strengthen the profile of Pancasila students, and extracurriculars. The purpose of the Pancasila student profile strengthening project activity is to make students more embedded in the six values of the Pancasila student profile in students (Pranata et al., 2022).

The advantage of an merdeka curriculum is that it makes learning plans simpler, and teachers and students are freed from choosing the design of the learning process in the classroom because there is no science and social studies specialization program so that students can choose subjects according to their interests, talents, and aspirations independently. Then another advantage is that schools feel more independent because schools have the authority to develop and manage learning curricula on the characteristics of education and students, and an independent curriculum is considered more relevant and interactive (Numertayasa et al., 2022). As for the shortcomings of the independent curriculum, it is to impose administrative staff and curriculum staff because the number of students in a school is large enough, so recording students who choose elective subjects is complicated. More than facilities and infrastructure is needed to facilitate learning with an merdeka curriculum because a large enough space is needed. The independent curriculum is still new for teachers, so it is not optimal for learning (Usman et al., 2022).

Advantages of Digital Pocketbooks in Physics Learning

Digital pocketbooks have several advantages in physics learning. The advantage of digital pocketbooks in physics learning is that physics pocketbooks are declared effective in physics learning (Agustina et al., 2022). Physics pocketbooks can increase students' understanding of concepts (Mirnawati et al., 2021).

The use of digital pocketbooks can attract students' interest in learning so that it can improve student problem-solving. In previous research by Khumaidi & Sucahyo (2018), digital pocketbooks were declared effective in learning the physics of momentum and impulse materials. In addition, a previous study conducted by Bani & Masruddin (2021) found that using digital pocketbooks can improve student cognitive outcomes. The use of digital pocketbooks has many advantages in physics learning. In an independent curriculum, students are given the freedom to find learning resources and tools. A digital pocketbook can help students by making it easier to learn anywhere and anytime.

Disadvantages of digital Pocketbooks in Physics Learning

In addition to the advantages, there are also disadvantages to using digital pocketbooks in physics learning. The disadvantage of digital pocketbooks in physics learning is that during online learning, the use of digital pocketbooks is less effective because teachers cannot control what applications students access during learning (Anita et al., 2021). In addition, using digital pocketbooks is a drain on memory on smartphones.

The use of digital pocketbooks also needs to be perfected again. This can be seen from several articles that the use of digital pocketbooks requires the internet to access applications. Some students experience problems that are cellphone storage that has run out or is not enough so that they cannot download and access digital pocketbooks. In addition, there are also some students who do not bring mobile phones to school or do not have mobile phones. So, teachers must provide mobile phones to lend to students.

CONCLUSION

From the results of the study conducted using the literature study method, which discusses the use of digital pocketbooks to support an merdeka curriculum, it was concluded that: 1) The use of digital pocketbooks can improve cognitive outcomes, can improve learners' critical thinking skills and can improve students' science literacy skills 2) The advantage of using digital pocketbooks to support an merdeka curriculum in physics learning is that it can improve students' understanding of concept. 3) The disadvantage of using digital pocketbooks is that digital pocketbooks are quite a drain on smartphone memory.

The implication for further research is to be able to utilize digital pocketbooks in physics learning by utilizing appropriate learning models so that physics learning can be more conducive and will make students more active in the learning process. The limitations of this study only explore the use, advantages, and disadvantages of digital pocketbooks. For further research, it is hoped that it can create a digital pocket book combined with the use of appropriate models in merdeka curriculum physics learning so that the learning process is more efficient.

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