

Development of E-Wetland Book to Support Student Learning at Lambung Mangkurat University and Malang State of University

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Abstract. The understanding of the development of wetland areas among students of the geography education study program at Universitas Lambung Mangkurat and the social studies program at Universitas Negeri Malang is quite diverse. Based on the problems found, innovation is needed to develop teaching materials like e-wetland books to support student learning. So, this research aims to develop an e-wetland book to support student learning at Universitas Lambung Mangkurat and Universitas Negeri Malang. To achieve the research objectives, a 4-D model was used, including defining, designing, developing, and disseminating. However, this research is only at the development stage, namely feasibility testing. The product feasibility test was carried out by three experts: learning instruction, learning content, and learning product experts. The research results show that the e-wetland book has proven valid for testing at the development stage, especially effectiveness testing and dissemination. This e-wetland book can support student learning in understanding the concept of developing wetland areas correctly. The results of this research have implications for increasingly creative and innovative learning in supporting joyful learning, inspiring a new era of educational possibilities. .

Keywords: development, e-wetland book, learning

1 Introduction

Education is one of the keys to answering the challenges of developing the digital era 4.0 to support human survival. The importance of education is to form a quality and competitive generation [1], [2]. In education, the learning process determines achieving the goals that lecturers and students want. With this, lecturers are required to be able to manage quality learning [3]. Learning consists of learning resources, learning media, learning facilities, learning objectives, learning methods, teachers, and students. These components are important components that are interrelated in shaping

good learning quality. Based on this, it can be seen that learning resources are part of an important learning component to be more effective [4].

Learning resources used in the current technological era are in the form of digital teaching materials. Digital teaching materials are the result of changes from printed teaching materials that adjust to technological developments in education [5]. Digital teaching materials as a communication medium in learning have advantages over printed books. Digital teaching materials are presented more interestingly and innovatively, and a combination of images, sound, video, or animation is used as learning content [6]. Interactive teaching materials can increase the activity of the learning process, encourage the creativity of lecturers and students, and improve student literacy skills [7], [8]. Thus, developing digital teaching materials can assist students in obtaining learning materials optimally. This is one of the efforts to improve the quality of education in Indonesia by developing digital teaching materials [9].

E-Wetland book is one of the results of developing digital teaching materials that are demanded in technology-based learning. E-Wetland book is a digital book with material related to wetlands in South Kalimantan to support learning in the geography of regional development and physical geography courses. Based on observations, the understanding of wetlands among students at Universitas Lambung Mangkurat and Universitas Negeri Malang is quite diverse. This is because each student has a diverse perspective and knowledge. This diversity shows that the needs of each individual are different [10]. Students still need to learn the concept of wetland knowledge and regional development, especially social studies education students at the Universitas Negeri Malang, because the characteristics of wetlands (peatlands) are not found in Malang. However, this condition is also still found in Geography Education students who still need to develop knowledge in developing wetland areas from the study of regional development geography. Thus, this can be used as a basis for developing the e-wetland book, which is one of the efforts to answer learning problems in the geography of regional development and physical geography courses both at Universitas Lambung Mangkurat and Universitas Negeri Malang.

Some previous studies state that the development of digital teaching materials aims to support the learning process [11], maintain the balance of the student learning ecosystem [12], increase students' knowledge based on their experiences [13], improve students' demand and motivation to actively participate in the learning process [14], [15], [16]. Therefore, this research is important in developing a digital textbook as an e-wetland book to support the geography of regional development and physical geography courses related to wetland material in South Kalimantan. This research also complements existing studies on developing learning resources and learning media based on educational technology to support digital literacy. In addition, this e-wetland book development research contributes knowledge to students about wetland material in South Kalimantan at a low cost. It is easily accessible for students outside the Kalimantan region.

2 Methods

This research is research and development with the 4D model, going through the stages of define, design, develop, and disseminate, [17] which this research is up to the develop stage (Figure

1). The product developed in this research is an e-wetland book to support regional development geography courses.

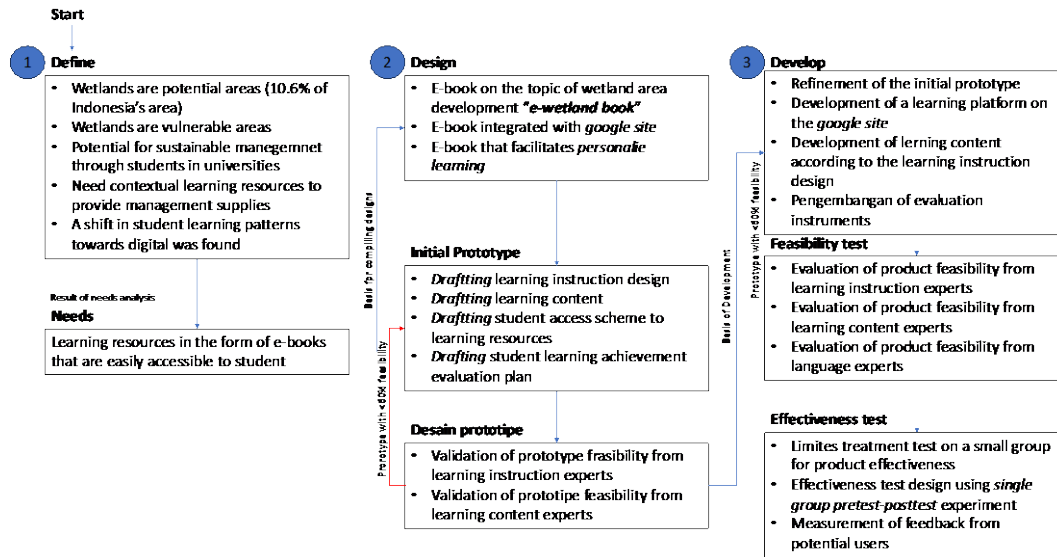


Fig. 1. Stages of e-Wetland Book Development

The research was conducted at the ULM geography education study program. Quantitative data is collected through responses outlined in the instrument by the validator. The instrument used contains indicators of this product development, consisting of learning instructions, learning content, and language. Quantitative data is collected through validator answers on a Linkert scale (numbers 1 to 5), as shown in Table 1.

Table 1. Linkert Scale

Value	Description	Score
SB	(Very Good)	5
B	(Good)	4
C	(Enough)	3
K	(Less)	2
SK	(Very Poor)	1

Source: [11]

This research data analysis uses the following percentage technique:

$$P = \frac{\sum x}{\sum xi} \times 100\%$$

Description:

P : percentage sought

Σx : number of answers of the test subject

Σx_i : number of ideal answers

100% : constant number

If the percentage results have been obtained, the feasibility of the product can be determined based on the following table:

Table 2. Criteria for Analysis Results

Percentage (%)	Description
80 - 100	Very good (no revision needed)
66 - 79	Good (Needs Slight Revision)
56 - 65	Good enough (needs partial revision)
40 - 55	Not Good (Partial Revision and Retesting of Content/Materials)
0 - 39	Not Good (Total Revision/Replacement)

3 Result and Discussion

This research was conducted at the Geography Education Study Program of FKIP Universitas Lambung Mangkurat with research respondents who took the Geography of Regional Development course in the even semester 2023/2024. The development steps in this study were carried out by referring to the 4D Models development model (Define, Design, Develop, Disseminate) [18], [19], [20].

3.1 Define

This define stage has two activity steps: problem identification and needs analysis. Both steps obtained a description of the facts, expectations, and alternative problem-solving that can facilitate the determination and selection of teaching materials developed. The problem identification step is conducting direct observations of students of the ULM geography education study program and the UM social studies study program. Based on the observation results, it was found that the Geography of Regional Development and Physical Geography courses found several problems in learning related to wetland material. The issues found include a different understanding of wetlands among students and the need for digital books related to wetlands that can support student learning. So, based on the needs analysis obtained, there is a need for diverse digital teaching materials, such as e-wetland books, to facilitate student learning related to wetland development. So, the development of digital books in the form of e-wetland books can improve student understanding.

Fig. 2. Display of E-Wetland Book

The results of learning instruction expert validation found that learning instructions were 96%, learning content was 96%, and language was 95%. So, it can be concluded that the validation results on all aspects have shown that the e-wetland book is feasible for lecturers and students to use in learning geography of regional development and physical geography. However, some minor revision notes, such as writing errors, still need to affect the quality of the e-wetland book. So, it can be concluded that the developed e-wetland book has presented exciting and effective learning content.

Technological development increases exponentially rather than linearly. This increase is swift and drastic, tends to be unpredictable and almost unlimited [21]. Rapidly developing information technology has an impact on the fields of education and science. Technology also has an important role that can be a driving force in all fields because technology is inseparable from everyday life in character building [22], [23]. This causes the current generation to use digital devices proficiently [24] and spend more time with technology [25]. This is a challenge for education regarding using technology in the learning process. This is supported by the fact that education development will always go hand in hand with technological developments [26].

Lecturers as one of the spearheads of teaching success and an important component in producing and improving quality education [27], so they must adapt to technological advances through the development of innovative and creative teaching materials and learning media [28], [29]. This is because students learn more efficiently using technology [30] and are more interested in teaching materials easily accessed through digital devices such as smartphones. This is because interactive digital teaching materials provide flexibility for students to study material wherever and whenever, can provide a memorable and in-depth learning experience, mastery of concepts, and can increase student motivation, students' scientific literacy, and interest in learning [31], [32], [33], [34], [35]. One of the innovations of digital teaching materials in education is the e-wetland book.

E-Wetland book is the result of the development of digital teaching materials containing material related to the development of wetland areas. This is one of the efforts to meet the needs of students both during the learning process in the FKIP ULM geography education study program and social studies education FIS UM so that the concept of wetlands and their development is uniform. In addition, this e-wetland book can increase understanding of wetlands for students outside South Kalimantan or the region that is not peatlands. This e-wetland book can transform material for students so that it can improve cognitive development and critical thinking skills and can improve the learning process through technology [36], [37], [38].

4 Conclusion

E-Wetland book as a digital teaching material containing wetland area development material that can support student and lecturer learning. The e-wetland book development procedure follows the 4D model and has undergone the validation stages of learning instructions, learning content, and language from experts in their fields. The validation results showed the percentage of each learning instruction expert was 96%, learning content was 96%, and language was 95%. This e-wetland book can complement the development of digital teaching materials for geography courses in regional development, physical geography, or similar courses. The implications of the results of this study

with the e-wetland book product can improve students' cognitive understanding related to the development of wetland areas.

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