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eWebook: exercise digital book as a learning solution for the Industrial Revolution 4.0 Era

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Abstract. The aim of this study is to develop a digital exercise book that can be used as a solution for learning in Industrial Revolution 4.0. This type of research was development research or known as Research and Development (R &D). The development of exercise digital book in this research adapted the development model which was developed by Plomp in 2007. Based on the findings of this research, it was concluded that majority of the students agree that the exercise digital book were good in improving their learning outcomes and effectiveness when compared to the use of printed books.

INTRODUCTION

The Industrial Revolution 4.0 is an era where the development of technology is one of the focuses. Because the development of this technology will be utilized in order to support the daily life of humans. In general, The Industrial Revolution 4.0 is a trend of technological transformation based on automation and information technology exchange. These trends include the use of Artificial Intelligence (AI), Internet of Things (IoT), and others. The emergence of the Industrial Revolution 4.0 prompted the emergence of the term Education 4.0 in the world of education. The term Education 4.0 refers to the utilization of information technology transformation trends in the teaching and learning process [1].

The Industrial Revolution 4.0 is increasingly useful in human daily life, especially in the world of education. This is because in the last two years, Indonesia and the rest of the world experienced the COVID-19 pandemic which became all countries in the world to be down at the beginning of the pandemic [2]. This decline occurred because this pandemic had a high rate of spread and resulted in almost all applying lockdown and physical distancing to prevent the spread of the disease more widely. This lockdown has an impact on people's social lives; covering economic conditions; health; education; and other aspects [3-5].

Based on this aspect, it is necessary to develop a teaching material which can be reached by learners in any constraints (online and offline), so learning process can run as expected. Exercise digital book are expected to be intermediaries between educators and learners in the learning process so that the teaching and learning process can be effective and efficient [6].

METHOD

This type of research was development research or known as Research and Development (R &D). The development of exercise digital book in this research adapted the development model which was developed by Plomp [7]. Plomp development model consisted of:

- preliminary investigation phase;
- design phase;
- realization/construction phase;
- test, evaluation and revision phases; and
- implementation.

Then, to assess the quality of teaching materials, a validity test was carried out by an expert validator, so valid, practical, and effective teaching materials were obtained.

RESULT AND DISCUSSION

From the observations that have been made, the need for an online independent exercise book is important. With online independent exercise books, students can practice and can be accessed by users anywhere and anytime. COVID-19 is also one of the reasons that the need for this exercise book is important.

Learning media is a means that can be used as an intermediary in the learning process to increase effectiveness and efficiency in achieving teaching goals and increase the motivation of students' enthusiasm for learning in the learning process.

The design of exercise digital book is presented in Figure 1.

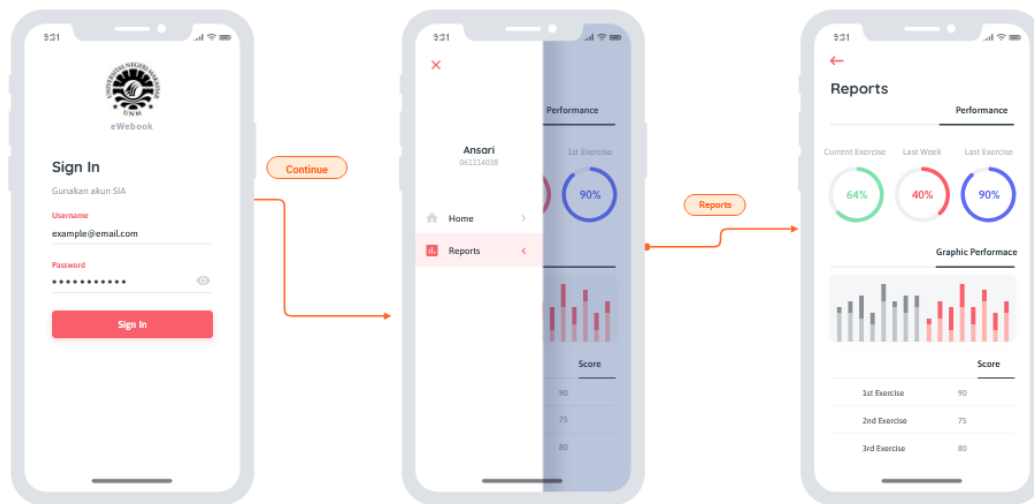


FIGURE 1. The full prototype design of exercise digital book

From Figure 1, it can be seen that exercise digital book contain information on a list of exercise and reports. It is hoped that with this information, it is hoped that the learning system can be integrated into one inseparable unit. This unity can make students more efficient in the learning process.

This was supported by the assessment of validation results obtained overall value which was 4.05 or equivalent to the relevant category. From the results and discussions, it could be concluded that exercise digital book could already be used in general in the learning process. It was also reinforced by the content validator's recommendation

that it was worth using without revision. It was expected that from the existence of this book, the teaching and learning process can be implemented effectively.

To see further the opinions and perceptions of students regarding the results of the development of this digital book are presented in table 1.

TABLE 1. Questionnaire results related to exercise digital book

Statements	Very Good	Good	Fair	Poor
The material in this book stimulates my curiosity	23.08	61.54	15.38	0.00
The presentation of the material in this book encourages me to discuss it with my friends	15.38	69.23	15.38	0.00
I'm much easier to learn to use the book	7.69	69.23	23.08	0.00
I'm very interested in using this book	30.77	46.15	23.08	0.00
By using this book, I'm learning to be more focused and coherent	7.69	69.23	23.08	0.00
This book has picture suitability to clarify the material	23.08	61.54	15.38	0.00
I'm more diligent in learning by using books this	7.69	53.85	38.46	0.00

From table 1, it can be seen that the majority of students said that exercise digital book were good in improving their learning outcomes. Students agree that the material in exercise digital book can encourage curiosity and ease in learning. In addition, with exercise digital book, students can learn more directed and coherently. This is in line with Santoso, Siswandari, and Sawiji findings that the use of eBooks has a higher level of effectiveness when compared to the use of printed books [8].

CONCLUSION

Based on the findings of this research, it was concluded that majority of the students agree that the exercise digital book were good in improving their learning outcomes and effectiveness when compared to the use of printed books.

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