

The development of an interactive e-book as a guide for making presentation slides in student final exams

Rafiud Ilmudinulloh 

Department of Islamic Religious Education, State Islamic Institute of Manado

Jl. Manguni Raya, Malendeng, Kec. Tikala, Kota Manado, Sulawesi Utara 95000, Indonesia

Corresponding author, e-mail: rafiud1243@gmail.com

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ABSTRAK

Penelitian ini bertujuan untuk menghasilkan E-book interaktif panduan pembuatan slide presentasi ujian akhir mahasiswa yang layak digunakan. Penelitian ini menggunakan model pengembangan 4D yang terdiri atas tahapan Define, Design, Develop, dan Disseminate. Data dikumpulkan menggunakan tiga jenis angket, yakni validasi ahli media, validasi ahli materi, dan uji lapangan. Data kemudian dianalisis menggunakan statistik deskriptif dengan menyajikannya dalam bentuk tabel dan diagram. Berdasarkan hasil penelitian, dapat disimpulkan bahwa E-book interaktif panduan pembuatan slide presentasi ujian akhir mahasiswa layak untuk digunakan dengan perolehan skor rata-rata 4.2, atau 84 persen yang berkategori baik tanpa revisi. Mahasiswa tidak hanya dimudahkan dalam hal teknis, tetapi juga teknologis, di mana E-book interaktif mudah untuk diakses dan disebarluarkan, serta menyenangkan bagi mahasiswa yang tertarik dalam inovasi pembelajaran. Hadirnya buku panduan berbasis E-book interaktif ini juga membantu dosen memberikan penilaian pada saat ujian akhir melalui kriteria dan indikator yang tersirat dalam buku tersebut.

ABSTRACT

This study aimed to produce an interactive e-book of a guide for making student final exam presentation slides that are appropriate for use. This study employed a 4D model consisting of Define, Design, Develop, and Disseminate stages. Data were collected using three types of questionnaires, namely media expert validation, material expert validation, and field tests. The data were then analyzed using descriptive statistics by presenting them in tables and diagrams. Based on the results of the research, it can be concluded that the interactive e-book was feasible to use with an average score of 4.2 or 84 percent, which falls in the "good" category without revision. Students are not only facilitated in technical terms, but also technological terms, where interactive e-books are easy to access and distribute. This also assists lecturers in providing assessments during student final exams through the criteria and indicators implied in the interactive e-book.



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INTRODUCTION

Skills of making and providing presentation materials are an indicator of digital technology mastery in the 4.0 education era which should ideally be owned by every college graduate. Presentation is an activity that uses spoken, written, and body language to convey data and facts to a group of people to achieve the expected goals (Sutomo, 2007; Triwidodo & Kristanto, 2004). These skills are included in the national qualifications or KKNI (Indonesian National Qualification Framework) at qualification level 6 (six), where graduates are expected to be able to apply science, technology, and art in their fields of expertise. In response to these demands, the Islamic Religious Education Study Program (PAI) at IAIN Manado has prepared a Standard Operating Procedure (SOP) for student final exams related to presentation criteria which require students to make presentation slides for the final research report.

Nevertheless, the SOP for student final exams related to presentation aspects has not specifically regulated the criteria for ideal presentation slides. Presentation slides are inseparable from presentation activities because the achievement of objectives, the attractiveness of the presentation, and attention are also very much determined by what and how the presentation material presented (Strauss et al., 2011; Taylor et al., 2007). The SOP states, "student presenters are required to create PowerPoints for presentations using the presentation file templates provided by the study program". The description turned out insufficient to guarantee the quality of the presentation slides made by students in presenting their research reports. This is reinforced by the results of initial observations of presentation slides made by graduates and brief interviews with several experienced lecturers indicating that the quality of student final exam presentation slides cannot be guaranteed. Seven out of the ten student presentation slides reviewed received low scores in the readability, clarity, and attractiveness criteria. The SOP at IAIN Manado has not clearly set the criteria for an ideal presentation slide, even though it has included it as an assessment point in the exam. It only provides a general description regarding the implementation of the exam, does not specifically regulate the feasibility of presentation slides made by students. The SOP becomes an institutional reference, so there are automatically multiple interpretations of a proper presentation slides in all faculties, so each faculty has a preference for the ideal presentation slide or even each examining lecturer.

According to Mayer & Mayer (2005), media presentations adhere to cognitive learning theory assuming that humans have two separate information processing channels for verbal and visual knowledge, human memory can only receive and process information in a limited way, and learning will be optimal if it is done actively. Mayer's theory then gave birth to three main principles, namely reducing redundant elements, managing important messages, and increasing effectiveness in content, language style, and interaction. Kurniawati (2020) provides 7 (seven) ways to make good, attractive, and effective presentation slides, namely 1) minimize the number of slides, 2) choose a font that is easy to read, 3) choose a font size that is easy for the audience to read from a distance, 4) keep the text simple, 5) use graphics, tables, diagrams, smart art, and bullet points to support presentations, 6) create attractive slide templates, and 7) use spelling and grammar properly and correctly.

The importance of a presentation slide in the final exam for PAI students encouraged researchers to develop a guidebook for making presentation slides in the form of an E-book so that they are easily accessible and widely distributed. According to Lee & Owens (2004), E-books are another form of printed books, which are electronically based and published digitally, requiring another device to access them. According to Tompo et al. (2016), E-books are published books in a digital (electronic) form consisting of text, images, and multimedia that can be read on computers, laptops, or other portable electronic devices (tablets and smartphones). An e-book is an electronic version of a traditional printed book that can be read using a personal computer or using other information technology tools (Martha et al., 2018). The use of e-books in the world of education will bring several advantages, including: saving time in the teaching and learning process, mobility in use that can be accessed anytime and anywhere, and fostering student independence in exploring and studying knowledge (Fathoni & Marpanaji, 2018).

Fitrianna et al. (2021)'s research has succeeded in developing an interactive e-book to increase student activity in the learning process using the Kotobee application through the 4D

development research procedure. Furthermore, Pratiwi (2019) combined various kinds of software, such as MS. Word 2013, Adobe Photoshop CC, Macro Flash 8, and Kvisoft Flipbook Maker Pro Software, to produce interactive e-books that are stored in the .exe electronic format so that they can run without supporting applications. In the higher education environment, several researchers have succeeded in developing an Interactive E-book based on Islamic Literacy using the 3D PageFlip Professional application as a medium for learning physics through the ADDIE development stages (Diani & Hartanti, 2018). Learning media produced by PageFlip Professional 3D software also improved SMPN 7 Cirebon students' mathematical abilities (Ferdianto et al., 2019). During the Covid-19 pandemic, many activities were carried out online, including a training workshop on making interactive e-book-based teaching materials for teachers in Indonesia to respond to the demands of learning in the era of education 4.0 (Ambarita, 2020). At an advanced level, e-books can be designed as hypercontent technology, which is capable of linking material to one another in a variety of content, such as images, text, videos, and animations via links or barcodes available in the e-book (Herlina, 2019). This type was developed during the pandemic to help students, teachers, and parents understand the Covid-19 virus as alternative learning that allows readers to get lots of references and content preferences (Nurfadhilah & Utomo, 2021). The hypercontent technology applied in e-books is also able to have an impact on improving learning outcomes, as proven by Rufaida & Nurfadhilah (2021) in research on electronics courses.

Based on previous research on interactive e-books, researchers have many references and preferences regarding development software that can produce Interactive E-Books and variants of research models that can be pursued. From some of the research above, it is also proven that Interactive E-Books can increase the effectiveness, efficiency, and productivity of a learning process. This research has a different locus and focus from previous studies, where research took place at IAIN Manado to produce an Interactive E-Book in the form of a Guidebook for Making Student Final Examination Presentation Slides. Guidebooks are different from modules, package books, or other reading books because their content is more operational, practical, and systematic. The development of a guidebook has its own challenges because it pays close attention to user needs, practices that occur in the field, and various other aspects that become regulations and culture in an organization. E-book-based guidebooks will undoubtedly produce unique characteristics with binding or optional discussions to help users carry out their duties properly. This research used the 4D development model because it accommodates the final product disseminated as a written policy in the PAI Study Program. In line with the previous studies, the researchers also combined various kinds of software to produce effective Interactive E-Books, but they planned to explore the capabilities and advantages of 3D PageFlip Professional software to develop the desired product with the help of other software, such as CorelDraw, Word, Filmora, and Camtasia.

The curriculum for the PAI study program includes supporting subjects such as computer application, learning technology, learning design, and learning media so that graduates have skills in developing and utilizing technological developments in the world of education, especially Islamic education learning. The knowledge and skills acquired in these courses need to be displayed in the implementation of the final exam through satisfying presentation slides. Undergraduate candidates need to prepare presentation material and develop it based on theory and practice obtained through educational technology courses. Presentation standards in the SOP need to be reduced in the form of guidelines for making presentation slides for student final exams to make it easier for students to achieve the expected criteria and help the exam administration team to control the quality of presentations, especially presentation slides made by students. This study aimed to develop an interactive e-book guide for making student final exam presentation slides appropriate for final exams. This research contributes to improving the quality of the presentation slides made by students during the final exams and helps lecturers to provide an objective assessment of student efforts in making presentation slides. On the other hand, it also makes a real contribution to the quality assurance institution at IAIN Manado through policy content relating to student final exams.

METHOD

The development model chosen is Thiagarajan, Dorothy, & Semmel's 4D development model. As the name suggests, the 4D model consists of four systematic stages: Define, Design, Develop, and Disseminate. The first stage consists of problem analysis and the identification of needs, characteristics, and materials. The second stage consists of the formulation of objectives and the preparation of assessment instruments. The third stage includes the design format determination, the software (3D PageFlip Professional software) selection, test of the validity by experts, and field testing. Then, the final stage consists of product deployment.

To assess the level of feasibility of product development, the data were collected through an assessment questionnaire consisting of assessment sheets of material experts, media experts, and field tests by students. The instrument was developed based on the principles and criteria presented by experts (see [Table 1](#)). The results of the respondent's questionnaire assessment were calculated using the percentage formula by dividing the partial amount by the whole number, then multiplying it by one hundred ([Formula 1](#)).

The average of respondent's assessment obtained was then converted into a criteria table to see the feasibility of product development. The results of expert validation gave rise to recommendations in the form of feasible field trials without revisions, feasible field trials with revisions, and not feasible trials. Input and suggestions from respondents written in the questionnaire were analyzed by the researchers by interpreting them independently based on the urgency and the resulting impact on the development process.

The media expert questionnaire contains six basic criteria for assessing the feasibility of interactive e-books prior to material expert testing and field testing ([Table 2](#)). The assessment questionnaire is devoted to the ability of the media to convey messages in a clear and directed manner. Meanwhile, the material expert test questionnaire has seven criteria, in which one additional is included, namely content criteria ([Table 3](#)). At first glance, the criteria of the material and media expert questionnaires are similar, but in fact, they are different. This is evident in the statements submitted to the two experts, which are relevant to their respective expertise. The number of the statements was also different; the material expert questionnaire contains 13, while of the media expert 10.

Table 1. Expert and field validity test criteria

Values	Categories	Annotations
90 - 100	Very good	Without revision
75 - 89	Good	Without revision
65 - 74	Good enough	Minor revision
55 - 64	Low	Major revision
0 - 54	Very low	Major revision

$$P = \frac{f}{N} \times 100 \% \quad (1)$$

Annotation: *P* = Percentage, *f* = Number of parts, *N* = Total number

Table 2. Media expert questionnaire

Criteria	Statements
Clarity	1. The text, pictures, tables and diagrams contained in the manual are clearly visible.
	2. The language used in the guidebook is clear, easy to understand and in accordance with PUEBI (Indonesian Spelling System General Guidance).
Practicality	1. The guidebook accompanied by examples of ideal presentation slides.
	2. The guidebook accessed at any time by students through the faculty's official website.
Legibility	1. The text contained in the manual can be read properly.
	2. The choice of colors on the content and background is great contrast.
Attractiveness	1. The guidebook has an appeal from the aspect of visual communication.
	2. Display guidebook is not boring.
Systematicity	1. Guidebook prepared on an ongoing basis.
	2. The guidebook has a consistent structure and composition in each section.

Table 3. Material expert questionnaire

Criteria	Statements
Clarity	1. The material is presented briefly, concisely, and clearly.
	2. The material is discussed in communicative language.
Practicality	1. The material is presented practically and is relevant to student needs.
	2. The material is presented in its entirety and continuously.
Legibility	1. The language used in the guidebook is easy to understand because it complies with PUEBI.
	2. There is an emphasis on important points in the material presented.
Content	1. The material presented is valid and reliable.
	2. The material presented is relevant to what students have learned.
Attractiveness	1. The guidebook has an appeal from the aspect of visual communication.
	2. Display guidebook is not boring.
	3. The guidebook is creatively arranged.
Systematicity	1. Guidebooks are compiled on an ongoing basis.
	2. The guidebook has a consistent structure and composition throughout.

RESULTS

The results of the study can be seen in Figure 2 and from the score of the validation test of a media expert, a material expert, and field tests on 70 students of the Islamic religious education study program. The results of the media expert validation test obtained an average score of 4.3 out of a maximum score of 5 (see Figure 1). If this figure converts into a table, it is 86% in a "good" category without revision. However, there are several essential notes from media experts, namely the inclusion of video tutorials in the e-book and examples of ideal slides, which aim to make it easier for students to follow the guidebook. Figure 3 shows the changes made based on input from the media experts.

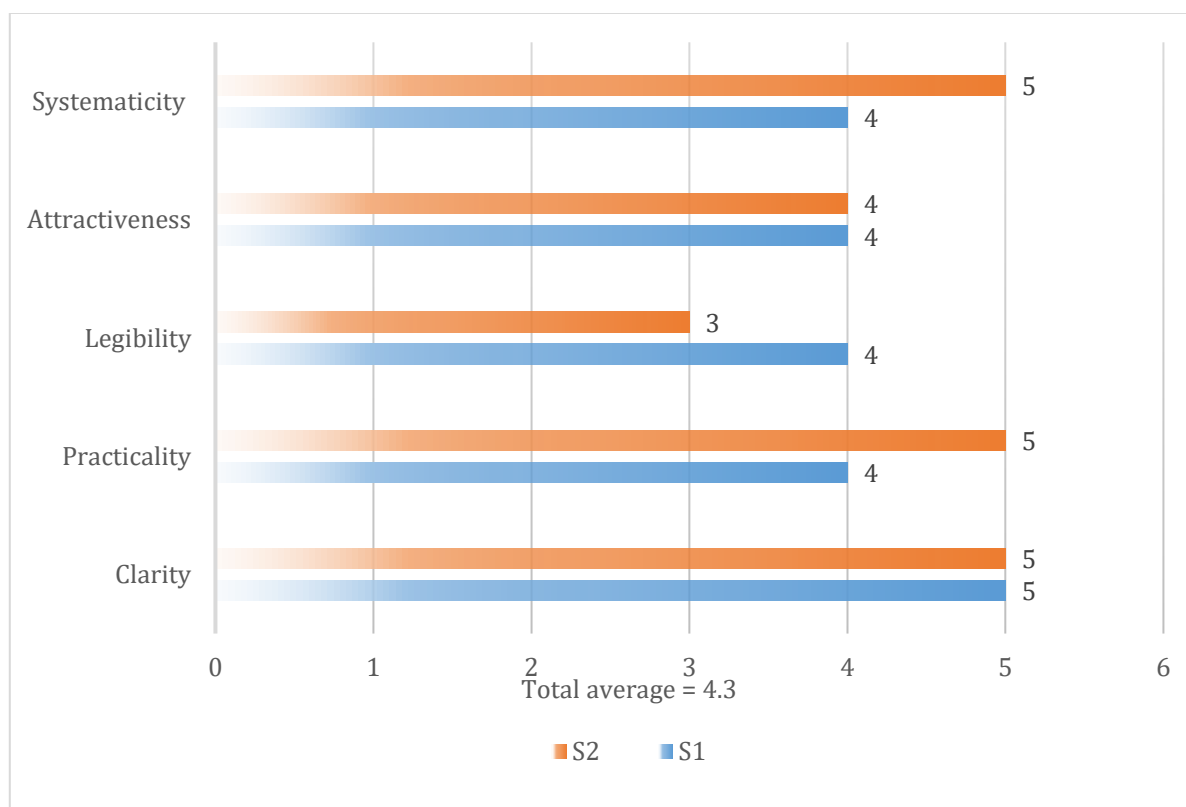
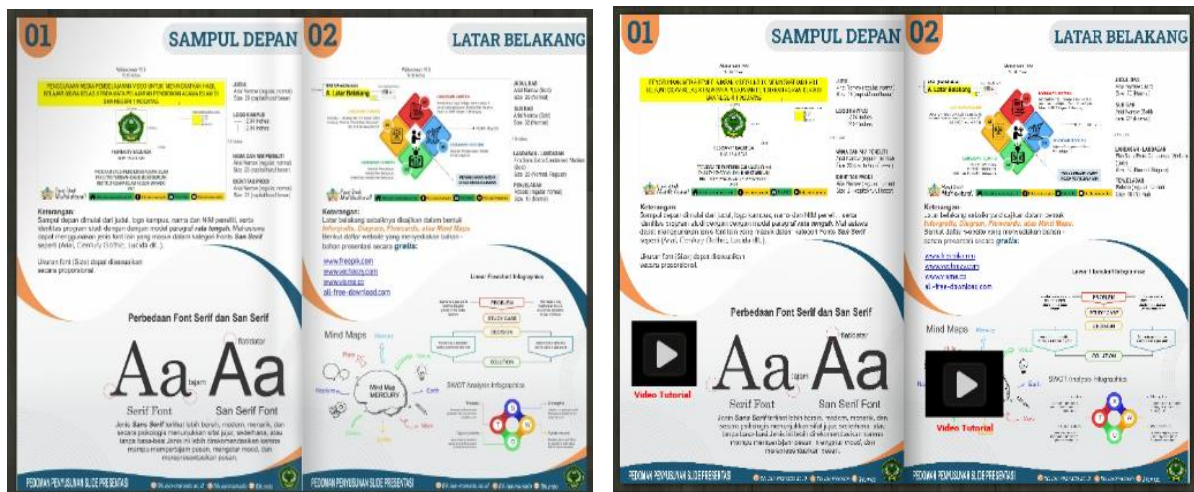


Figure 1. Media expert validation test



Figure 2. Video tutorial screenshot



Before

After

Figure 3. Before and After Adding Video Tutorials

BAB III (Metodologi Penelitian)
A. Penelitian Tindakan Kelas

Prosedur PTK Model Kemmis dan Taggart

```

    graph TD
        A[Perencanaan] --> B[Refleksi]
        A --> C[SIKLUS 1]
        A --> D[Pelaksanaan]
        B --> E[Pengamatan]
        C --> E
        D --> E
        E --> F[Perencanaan]
        F --> G[Refleksi]
        F --> H[SIKLUS 2]
        F --> I[Pelaksanaan]
        G --> J[Pengamatan]
        H --> J
        I --> J
        J --> K[?]
    
```

SETTING PENELITIAN

- SMA Negeri Modayag Kab. Bolaang Mongondow Timur.
- Siswa Kelas X.IIS I yang berjumlah 27 orang siswa.
- Jadwal Penelitian 09 Januari – 13 Februari 2020.

DATA & SUMBER DATA

- Data Verbal dan Nomenik
- Hasil Tes, Observasi, dan Dokumentasi.

MINAT SISWA TERHADAP MATA PELAJARAN PAI

Sangat Tidak Berminat	7%
Tidak Berminat	65%
Berminat	10%
Sangat Berminat	18%

UJI HOMOGENITAS

Levene Statistic	Df 1	Df 2	Sig.
2.101	1	53	0.153

0,153 > 0,05 = Homogen

PRA SIKLUS

Siswa Tidak	8%	85 (Nilai Tertinggi)
Siswa	16%	52,57 (Nilai Rata-Rata)
Siswa Tidak	8%	30 (Nilai Terendah)

Footer: Pusat Studi Multikultural! | ftik.iain-manado.ac.id | ftik.iainmanado | ftik.mdo | ftik.iainmanado

Figure 4. Example of an ideal presentation slide

Video tutorial added in e-book that has been exported. The video is at the bottom of each manual page. It can be seen that there is a difference in the appearance of the e-book after accommodating input from media experts. In addition, the researcher includes an example of an ideal slide made based on a research report by a student. The ideal presentation slide example in Figure 4 is presented at the end of the e-book as a closing discussion in the guidebook. The presence of video tutorials and examples of ideal presentation slides further complement product development. In line with what was stated by Dale, (1954) in "The Cone of Experience", a person's chances of understanding something through listening to media such as videos or films are greater than viewing media such as books or pictures, 50% versus 10%. The visual media is at the highest peak of the experience cone, while the hearing media is in the middle of the experience cone. It is also explained in Bloom's Taxonomy that to achieve goals at the C3 level (Application), a person is not only required to understand but also connect previous knowledge to solve problems and apply them to new situations (Krathwohl, 2002). Therefore, additional experience is needed to complement student understanding so that they can make the desired presentation slides in the guidebook.

Yorganci (2022) in his research proved that interactive e-books accompanied by videos had a significant impact on learning outcomes compared to static e-books without videos. His findings are supported by Tom W. Malones' theory of intrinsic motivation and Mayer's cognitive theory, in which interactive e-books accompanied by videos can increase intrinsic motivation and reduce cognitive load (Malone, 1981; Mayer & Mayer, 2005).

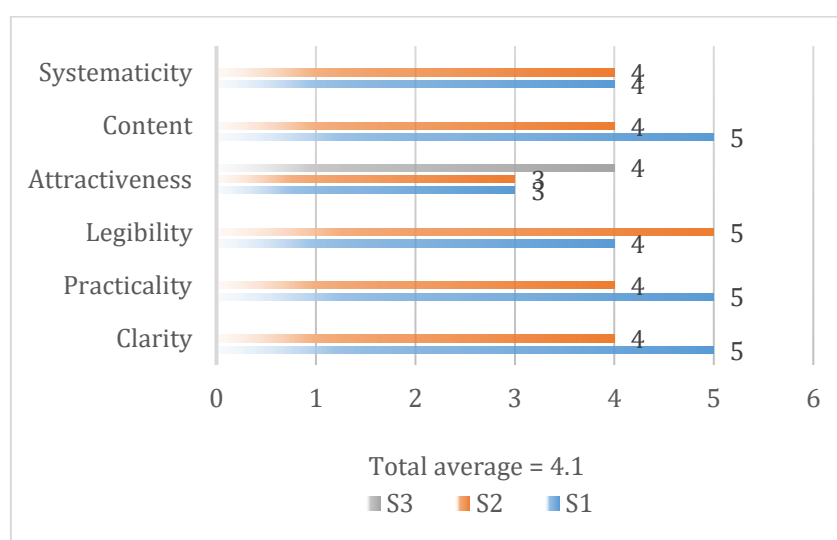


Figure 5. Material expert validation test

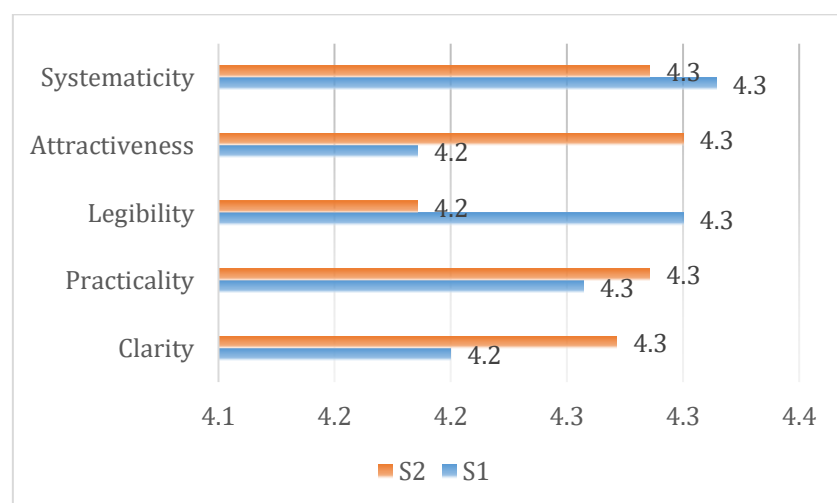


Figure 6. Field test

This was also confirmed by the results of the investigation by [Lim et al. \(2020\)](#) about the effect of interactive e-books on academic achievement. The results revealed that interactive e-books have more influence on learning success than traditional e-books when viewed from the achievement of learning outcomes. The results of the material expert validation test obtained an average value of 4.1, or 81% of the total score (see [Figure 5](#)). [Figure 5](#) indicates "good" "without revision". There is one additional category in the material expert assessment questionnaire, namely content that includes validity, reliability, and the relevance of the material to students' prior knowledge.

Field test results on 70 students get an average score of 4.3 or 85% in the "good" category "without revision" (see [Figure 6](#)). The test was carried out after students read and observed product development. Based on the validity test of media experts and materials as well as field tests, the development product can be said to be suitable for use; in the "good" category "without revision". Furthermore, it enters the final stage, namely dissemination through various structural and non-structural devices owned by the PAI study program.

DISCUSSION

After going through the research stages namely define, design, develop, and disseminate, the research objective of producing an interactive e-book named "a handbook for making student final exam presentation slides" which is feasible to use was achieved in the "good" category "without revision". This can be seen from the results of the media expert test score of 4.3, material expert test 4.1, and field test 4.3. The results of this study are very relevant to previous studies. [Saripudin, et al. \(2022\)](#) developed an interactive e-book about local history to increase local wisdom and digital literacy. The development product is rated as feasible for use by students from the aspects of material, presentation and completeness. Most students are satisfied with the quality of the interactive e-books. Likewise with [Komikesari & Lubis, \(2022\)](#) researched on STEM-based interactive e-books to improve students' literacy skills and obtained an average score from experts, materials, and media above 80%. The results of their research are proven to be able to trigger scientific literacy skills in the globalization era. [Ramadhani & Khusniati \(2022\)](#) also developed an interactive e-book which contains a virtual laboratory to increase student learning motivation with media expert test results of 92.94% and material expert tests of 89%. In addition to being suitable for use, the development product is also proven to be able to increase student learning motivation after seeing the significant comparison of pretest and posttest scores.

The interactive e-book is a further development of the static e-book. E-books can be said to be interactive when they have a high level of interaction between users, media/programs, and the environment. Interaction in interactive e-books is divided into four types, namely interactions between e-book components, interactions between e-books and users, interactions between users/communities, and interactions between environments ([Firdausy & Prasetyo, 2020](#)). Interactive e-books are characterized by a combination of multimedia elements such as images, animations, simulations, videos, links, text, etc. arranged systematically in a digital book ([Hasan et al., 2018](#)). The development product, the interactive e-book manual, admittedly does not have the high level of interaction that is characterized above. User interaction only exists in videos and links included in the book. This is because the types of books developed are different from textbooks or modules in general which are very complex and comprehensive. Guidebooks are classified as non-text books which contain materials for developing knowledge, attitudes, and skills ([Kosasih, 2021](#)). Ten criteria are owned by a quality guidebook ([Greene & Petty, 1975](#)). These criteria include: (1) attracting readers' interest, (2) motivating readers, (3) loading useful content, (4) using good and clear language, (5) being relevant to the reader's initial knowledge, (6) stimulating actual self-development, (7) avoiding biased concepts, (8) having clear goals, (9) emphasizing certain values, and (10) accommodating different abilities of each reader.

Based on the results of field tests, the attractiveness aspect of product development in terms of visual communication obtained an average score of 4.2 or 84%, and in terms of appearance, it obtained an average score of 4.3 or 86%. Both sides are considered "good" by potential users because in the design stage, the researcher applies the principles of multimedia development, namely the principle of spatial proximity, the principle of coherence, the principle of modality, and

the principle of redundancy (Mayer & Mayer, 2005). The principle of spatial proximity can be seen from the layout of each element of the interactive E-book, which is interrelated and has sufficient spatial proximity to strengthen the reader's understanding. The principle of modality is reflected in the focus of the interactive E-book on one channel, namely the visual channel, although there is an optional video tutorial in it. Finally, the principle of redundancy or repetition of things that are not important is applied in the preparation of material operationally and technically, without a lengthy explanation. Several research results reveal that interactive e-books affect motivation when compared to static e-books or printed books (Firdausy & Prasetyo, 2020; Mohammed & Rahman, 2015; Smeets & Bus, 2015).

At the design stage, the objective of developing an interactive e-book was formulated, which is nothing but to provide benefits for students in making exam presentation slides and for examiners in doing assessments. The quality of the language elements of the interactive e-book can be seen from the results of the assessment of the readability and clarity aspects, where the average value reaches 4.3 or 86% in the "good" category. Some essential points in the assessment include the compatibility of the language with PUEBI, the resolution of the elements contained in the E-book, the choice of font size and type of font, and the color integration of each element. An interactive e-book guide for making presentation slides is intended for final students who are compiling research reports and have completed all face-to-face lecture programs so that they have automatically studied educational technology class courses so that students have the sufficient initial knowledge base to understand the instructions in the guidebook. Students are required to operate independently or in groups to understand the contents of the guidebook because this is part of the general framework for developing the book. This is proven by the continuous and consistent systematics of the book so that it obtained a good rating from students, namely 4.3 or 86% in the "good" category. Accommodative criteria for differences in student learning styles are realized by providing video tutorials for students who have a learning style other than visual. All the criteria regarding a quality guidebook presented by the experts above have been answered in the developed product. Nevertheless, the researchers realize that many things have not been maximized by 3D PageFlip Professional software to produce e-books that have high interaction. Additional features need to be improved to add an interactive impression in product development.

Further research is needed to improve these products through effectiveness tests on student performance in the final exams. The development of interactive e-books is supported by e-learning theory which explains how learning technology can be integrated to increase learning effectiveness (Kumar & Sharma, 2021; Wang, 2012). This theory gave birth to three basic principles, namely 1) multimedia that emphasizes the use of various media formats such as images, text, video, and animation; 2) modality that includes strengthening learning messages through two cognitive channels; and 3) learner control that allows students to control his will to study. The positive results for e-book development are also influenced by the characteristics of students who incidentally are digital natives and have a high interest in using gadgets (Mabaroh & Sugianti, 2021). Moreover, e-books are enriched with various interesting media elements that help students understand concepts (Hadaya & Hanif, 2019). Conventional textbooks tend to limit teachers in designing learning materials creatively so that learning materials do not find momentum with a variety of student characteristics (Lau et al., 2018). Fulfillment of the learning needs of students who pay attention to their characteristics is the main capital in increasing their learning satisfaction. It is evident in the research of Joo et al. (2017), where positive perceptions of e-books are obtained by students when their expectations met.

Slightly different from the previous research which mostly focused on developing conceptual teaching materials in the classroom, this research is more towards technical, instructive matters to produce ideal presentation slides. This research has not been able to answer the success of product development in improving the quality of student final exams through presentation slides and revisions to the examiners' assessment sheets because they have not received support in the form of institutional policies from the study program managers. The utilization was limited to students who were guided by the researchers. The researcher realizes that there are still many deficiencies in the product development, so further research and development is needed to update

the interactive e-books. The researcher recommends testing the level of product development effectiveness, its effect on other variables such as student motivation, digital literacy skills, and skills improvement, as well as its impact on digital competency mastery.

CONCLUSION

After going through the stages of 4D Model development, namely Define, Design, Develop, and Disseminate, which included media expert validity tests, material expert validity tests, and field tests, it was concluded that the interactive e-book guide for making students final exam presentation slides was feasible to use in the implementation of the final examination of students of the Islamic Religious Education study program with an average score of 4.2 or 84% which falls in the "good" category "without revision". Students are assisted not only in technical terms, but also in technological terms, where the interactive e-books are easy to access and distribute and are fun for students interested in learning innovation. The presence of this interactive e-book-based guidebook also assists lecturers in providing an assessment during the final exam through the criteria and indicators implied in the book. The interactive e-book-based guidebooks are expected to be signs that guide students to produce ideal presentation slides instead of limiting students' space for movement, expression, and creativity, which actually makes students feel insecure. This research has not been able to answer the success of product development in improving the quality of student final exams through presentation slides and revisions to the examiners' assessment sheets because they have not received support in the form of institutional policies from the study program managers.

Author contributions

The author made significant contributions to the study's conception and design. The author was in charge of data analysis, interpretation, and discussion of results. The final manuscript was read and approved by the author.

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Conflict of interest

The author declares that there is no potential conflict of interest.

Data availability statement

All data are available from the author.

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