

Digital book for assessment and evaluation courses based on Kvisoft-kelase asynchronous pattern

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Abstract

This study was conducted with the aim of obtaining information about the design of assessment and evaluation digital book as well as deployment process of the digital book through asynchronous patterns. This study uses development method with the 4D design which focuses only on define and design phase. Parties involved in conducting design trial consist of two experts namely expert of education evaluation and expert of informatics engineering education, with a trial tool in the form of questionnaires. The technique was used to analyze the trial results data from those experts was descriptive quantitative with descriptive percentages calculation. In this research, the design result of assessment and evaluation digital book with Kvisoft Flipbook Maker and the initial design of deployment with an kelase asynchronous pattern are included in the good category with a percentages of 89.38% based on experts review.

Keywords: *assessment and evaluation, digital book, kelase asynchronous, Kvisoft Flipbook Maker.*

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1. Introduction

The fourth industrial revolution era has changed the way society thinks, views and behaviors in facing the complexity of problems in all areas of life quickly through the help of technological advances. The world of education is one area of life that is also not spared from the technological advances influence, especially information technology. The advancement of information technology in the education field has changed the material/learning resources and support services of the learning process from conventional forms that are accessed offline to the digital form that can be accessed online. One of the supporting resources the learning process is the book, and it has changed since the utilization of information technology in the field of education and even during the industrial revolution 4.0 current has undergone metamorphosis very quickly.

Currently, the book has begun to change very quickly, from a printed book to a digital book format (namely .pdf) and even with the presence of applications to create digital books that can be accessed for free on the internet can facilitate the lecturers to making interesting digital book and interactive in accordance with the syllabus set by the college. Also, especially in the era of fourth industrial revolution, digital book distribution pattern is expected to be easily accessible online by the students whenever and wherever they are so that the learning process can be doing smoothly. To realize the desired expectations, it is necessary to develop a digital book form with attractive packaging, interactive and easily accessible by the students whenever they want and wherever they are. Those statements are following the opinion of Sugiharni [1] which in essence states that "it is necessary to develop interesting teaching materials, qualified, and able to be accessed by the students whenever and wherever they are, so can to get the interest of students to learn it".

However, to be able to develop digital books in accordance with those expectations is not easy, because it requires special skills that must be possessed by the lecturer and the fact also shows that not all lecturers have the ability to make the digital book interesting, interactive, and easily accessible. In general, the limited ability in digital bookmaking is experienced by lecturers who do not have an information technology/computer education background. In fact, not only lecturers who have the ability in the field of education who have not been able to create a digital book, it turns out in the majors of Informatics Education, Universitas Pendidikan Ganesha there are also computer lecturers who can not make digital books.

This is following the statement of Suyasa, Divayana, and Adiarta [2] which states that most lecturers have good competence in making conventional module lessons, just lecturers are still not optimal in making teaching materials in digital form. Another statement from Divayana, *et al* [3] which states that “from the data obtained at SMA N 1 Ubud shows that teachers of 80% still have not been able to create teaching materials in the form of digital for learning purposes, while in SMA PGRI 3 Ubud from 40 teachers, 35 teachers (87.50%) also still not able to make teaching materials in the form of digital for learning purposes”.

Whether or not a digital book is created for a particular subject, it is viewed from an important aspect of the usefulness and complexity of the material contained in a course taught to the student which is adapted to the field of science/majors taken by the student. Especially in universities in the education field, such as Universitas Pendidikan Ganesha, there are some general courses of education that are important to know and must be taken by all students who majored in education, one of which is Assessment and Evaluation. The importance of this course is given because as the basis for providing knowledge and coaching the ability of students to be able to determine the right decisions based on accurate recommendations by using appropriate assessment and evaluation models.

The main purpose of the assessment and evaluation process is to provide an appropriate recommendation as a basis for facilitating decision making. This is following some statements that have been expressed by some researchers, including Gagnon, Hall, and Marion [4]; Sugiharni, *et al* [5]; Zheng and Guan [6]; Dahler-Larsen [7]; Machaka [8]; Molina and Ratté [9]; Ying, Liu, and Qin [10]; Mapitsa and Khumalo [11]; Muammar, Widodo, and Sulhadi [12]; Sumual and Ali [13]; Liu and Stronge [14]; Finucane, Martinez, and Cody [15]; Madigan, *et al* [16]; Erford, *et al* [17]; Jin, *et al* [18]; Wotela [19]; Bichi [20]; Prihatiningsih and Qomariyah [21]; Donaldson and Papay [22]; Cornelius, Wood, and Lai [23], Cutts, *et al* [24]; which in essence also states the same thinking that the assessment and evaluation process leads to the provision of recommendations as the basis for making the right and valid decision.

Assessment and Evaluation courses are subjects in the education field with complex material content but must be completed in 1 semester with the weight of 3 credits. Due to the limited time and complexity of the content of Assessment and Evaluation course that must be taught to the students, it is very necessary to be made of digital teaching materials, so that the material created becomes more interesting, interactive, accessible, easily understood by the students, and expedite the learning process.

When viewed from some of the problems that have been disclosed, it is necessary to find solution solving by using open source application that is easily obtained for free through the internet and easy to operate, so that lecturers can make their digital book that interesting, interactive, accessible and in accordance with syllabus in a fast period. One application that can be used to create a digital book with interesting and interactive features is Kvisoft Flipbook Maker, while the free application that can be used to disseminate digital books that have been formed asynchronously to learners is open source learning platform in the form of kelase.

Based on existing problems and problems solving that initiated, then these research problems statements, are: 1) How are the design of assessment and evaluation digital book made using Kvisoft Flipbook Maker application?, 2) How the deployment process of digital books through asynchronous patterns by using the kelase platform? Based on the research problems statements, it is clear that the main objectives of this research are: 1) to know in depth about the application of Kvisoft Flipbook Maker used in making design of assessment and evaluation digital book, 2) to know the design of assessment and evaluation digital book deployment pattern which is given to students through the kelase platform.

To reinforce the idea of why this research is important to do, it is worth noting that this research occurs because it is based on some previous research that has been done by Prasetya, Irianto and Patmanthara [25] about the template design of "e-pub" digital book, which in their research disclosed that there is difficulty in making digital books using e-pub because until now the books creation with e-pub format is not easy and requires special knowledge. Based on the difficulties still found in the research that has been done by Prasetya, Irianto, and Patmanthara, it is necessary to do this research as a solution to overcome that difficulty that is a breakthrough using Kvisoft Flipbook Maker application that can provide ease in making digital books. Research conducted by Suryani, Ruhimat and Ningrum [26] on the development of interactive digital textbooks for understanding the concept of Geography, where their research has succeeded in producing interactive digital textbooks equipped with multimedia elements (so

as not only a series of texts course material, but there is also equipped with interactive images, interactive overview, video, and animation) and packaged in the form of a flip book. The results of research conducted by Suryani, Ruhimat and Ningrum in the form of an interactive digital textbook that is packaged in the form of flip book, it can be used as a basis in this research in producing a digital book product that is also packaged in the form of flip book by using Kvisoft Flipbook Maker.

Based on the problems that emerged, some previous research behind this research and breakthrough solutions that are expected to be implemented, so the author is interested to conduct research that focuses on the design of digital books using Kvisoft Flipbook Maker applications and deployment patterns design of digital book asynchronously to produce a digital book interesting, interactive, and easily accessible by students so as to be able to support the learning process in the Assessment and Evaluation courses optimally.

2. Research Method

The method used in this research was development method with 4D model development design consisting of several stages, including: define phase, design phase, develop phase, and disseminate phase. In this research focuses only on two phases that are on define phase and design phase. This is occur because the purpose of this research is to focus only on digital book design using Kvisoft Flipbook Maker application and design of digital book deployment pattern that has been formed. The things done in the define phase are (a) front-end analysis, (b) learner analysis, (c) task analysis, (d) conceptual analysis, and (e) preparation of learning objectives. The design phase includes: (a) preparation of the standard reference tests, (b) selection of media appropriate to objectives, for delivering teaching materials, and (c) selection of existing and developed device formats.

To produce a quality digital book design, it is necessary to conduct an initial test involving two experts namely expert in the field of evaluation education and expert in the field of informatics education. Tools used by those experts to conduct an initial test of the digital book design that has been formed were using the instrument in the form of questionnaires. To obtain the data analysis results that have been collected from the test results that have been done by the two experts, then the analytical technique used was descriptive quantitative by using descriptive percentage calculation. Those results of the analysis then interpreted by converting the scores obtained on the percentage descriptive calculation into categorization form which is at the achievement level of five scales as shown in Table 3.

3. Results and Discussion

Following the focus of this study, the study results refer to the two-phase-on development of 4D models, namely the define phase and design phase. In the define phase, the following results obtained are:

a. The front-end analysis

This section is done to find out the problems that occur in the learning process of Assessment and Evaluation course, especially on the Department of Informatics Education, Universitas Pendidikan Ganesha. The problems that are found in the learning process of Assessment and Evaluation are: (1) the student difficulties in understanding the material, (2) the learning source is still focused on the lecturer, (3) the decreases stamina and concentration of the students when they're receiving the learning, (4) the limitations of instructional media utilization used in the learning process optimally, (5) the limitations of teaching materials in the form of books such as tutorial books or digital modules that varied so have not been able to realize the learning process that active, creative, effective and fun.

b. The analysis of learners

Students who take the Assessment and Evaluation course are the fifth-semester students in the Department of Informatics Education as many as 20 students. The details of those number of students are 15 peoples with high ability and five peoples with low ability.

c. Task analysis

The subject matter that is prepared is adjusted with the syllabus that has been set. The subjects discussed in the digital book of Assessment and Evaluation course at the Department

of Informatics Engineering Education, Universitas Pendidikan Ganesha, such as shown in Table 1.

d. The concept analysis

This section identifies and analyzes the concepts presented in the digital book. The concepts of this digital book can be seen in Table 1.

Table 1. The Concept of Assessment and Evaluation Digital Book based on Kvisoft Flipbook Maker

No.	Subjects	Learning Materials
1.	The basic concept of test, measurement, assessment, and evaluation	Definition of the Test; Measurement Definition; Assessment Definition; Evaluation Definition; Relationship Measurement, Assessment, and Evaluation Tests; Test Differences, Measurement, Assessment, and Evaluation.
2.	Test and non-test	Types of Tests; Terms of Good Test; Steps for Preparation of the Test; Non-Test Types; Good Non-Test Requirements; Steps of Non-Test Preparation.
3.	Validity and reliability	The validity of Test and Non-Test Instruments Content; Validity of Test and Non-Test Instruments Items; Reliability of Test and Non-Test Instruments.
4.	Measurement	Classical Test Theory; Modern Test Theory; Advantages and Disadvantages Between of Classical Test Theory and Modern Test Theory.
5.	Assessment	The scope of Assessment Aspects; Types of Assessment; Assessment Tool Development Steps; Test Weighing Techniques; Scoring of Test Results; Conversion of Learning Results Score.
6.	The various of evaluation models	<i>Goal Oriented</i> Evaluation Model; <i>Goal Free</i> Evaluation Model; <i>Formative-Summative</i> Evaluation Model; <i>Countenance</i> Evaluation Model; <i>Responsive</i> Evaluation Model; <i>CSE-UCLA</i> Evaluation Model; <i>CIPP</i> Evaluation Model; <i>Discrepancy</i> Evaluation Model.
7.	The stages of making an evaluation instruments	Determination of Evaluation Aspects; Preparation of Evaluation Instrument Items (Initial Instruments); Determination of Content Validity and Validity of Evaluation Instruments Items; Reliability determination of Evaluation Instruments; Final Instrument Making.

e. Preparation of learning objectives

The main objective of the Assessment and Evaluation course is to introduce the concept of assessment and evaluation in the field of education so that students can understand data collection techniques, data analysis, and data interpretation to obtain appropriate recommendations in making a decision. The main purpose of the assessment and evaluation process is to provide an appropriate recommendation as a basis for facilitating decision making.

The design phase, conducted with the aim to design a digital book to obtain a prototype of teaching materials on Assessment and Evaluation course which is still in the form of initial draft. Some results obtained at the design phase as follows.

a. Preparation of the standard reference test

At this stage the preparation of tests used to measure the ability of students in the following of learning activity in Assessment and Evaluation course. The test compiled in this research is the final test to measure students' knowledge after reading the Assessment and Evaluation digital book. The test form given in the form of essay test, which can be seen in the following Table 2.

The assessment scores used to measure students' knowledge test results using an approach of standard reference assessment on five scales because this approach requires a minimal percentage of student knowledge achievement. The standard reference assessment score on five scales can be seen in Table 3. Based on Table 3, students can be said to pass, if the percentage of their's knowledge achievement > 65%.

Table 2. Essay Test

Subjects	Item-	Questions
The basic concept of test, measurement, assessment, and evaluation	1	Explain, what is the meant of a test?
	2	Explain, what is the meant for measurements?
	3	Explain, what is the meant for assessment?
	4	Explain, what is the meant for evaluation?
	5	Describe the differences and relationships among of tests, measurements, ratings, and evaluations!
Test and non-test	1	Explain, what the requirements of a test instrument are said to be good?
	2	Explain, what the conditions of a non-test instrument are said to be good?
	3	Make each one of the test instrument samples if reviewed based on the form of implementation!
	4	Explain the steps of preparing the test instrument and non-test!
	5	Make each one sample of non-test instruments in the form of questionnaires and interview guidelines!
Validity and reliability	1	Make the instruments of 25 items, then determine the validity of those items!
	2	Make the instruments of 25 items, then determine the reliability of those items!
Measurement	1	Make the instruments of 25 items, then determine the difficulty index of the items!
	2	Make the instruments of 25 items, then determine the differentiating power index of the items!
	3	Make the instruments of 25 items, then determine the estimate of parameter/ability learners receive the items using logistics model with three parameters!
Assessment	1	Mention and explain the types of assessment!
	2	Explain the steps of developing an assessment tool!
	3	Describe the scope of assessment aspects!
The various of evaluation models	1	Explain, what is the Goal-Free Evaluation Model?
	2	Explain, what is the formative-summative evaluation model?
	3	Explain, what is the CSE-UCLA (Center for the Study of Evaluation-University of California in Los Angeles) Evaluation Model?
	4	What is the best evaluation model suitable for evaluating digital library programs? Explain, why that model is considered suitable for evaluating the digital library programs?
	5	What one of the most suitable evaluation models used to evaluate the 2013 curriculum? Explain, why that model is considered suitable for evaluating the 2013 curriculum?
The stages of making an evaluation instruments	1	Determine the evaluation aspects that use for evaluating the e-learning implementation in a college!
	2	Make evaluation instruments items that use for evaluating the e-learning implementation in a college!
	3	Determine content validation and items validation of evaluation instrument that uses for evaluating the e-learning implementation in a college!
	4	Determine the reliability of evaluation instruments that use for evaluating the e-learning implementation in a college!
	5	After obtaining valid items, then make the final evaluation instrument that uses for evaluating the e-learning implementation in a college!

Table 3. The Score of Standard Reference Assessment on Five Scale for Students' Knowledge Test

Percentage of Achievement	Score	Grade	Predicate
90 – 100	4	A	Excellent
80 – 89	3	B	Good
65 – 79	2	C	Moderate
40 – 64	1	D	Less
00 – 39	0	E	Poor

b. Media Selection

At this stage, the determination and selection of appropriate media/applications are used to create a digital book for Assessment and Evaluation course. The application used to create media in the form of digital book that can use to save material for the Assessment and Evaluation course with interesting and interactive packaging is Kvisoft Flipbook Maker, while the material contents are sourced from 'ASESMEN DAN EVALUASI' textbook. The display of Kvisoft Flipbook Maker application can be seen in Figure 1.



Figure 1. Design of assessment and evaluation digital book using Kvisoft Flipbook Maker

The design shown in Figure 1 was obtained by including the content of the 'ASESMEN DAN EVALUASI' textbook with .pdf format into Kvisoft Flipbook Maker application. To get the packaging of books more interesting and elegant then added facilities theme 'tree' in the background. Besides, it inserted the music player facility into a digital book to reduce the saturation when reading a book.

c. Selection of format

The assessment and evaluation digital book developed using Kvisoft Flipbook Maker produces digital books that have .swf formats that can run on computers, laptops or through smart phones. Besides, with the deployment pattern of digital book asynchronously through the open source learning platform facility that is Kelase, it allows students to access and get digital books whenever and wherever they are as long as it can be connected to the internet. The design of digital book deployment pattern asynchronously on the students majoring in Informatics Education, Universitas Pendidikan Ganesha can be seen in Figure 2.

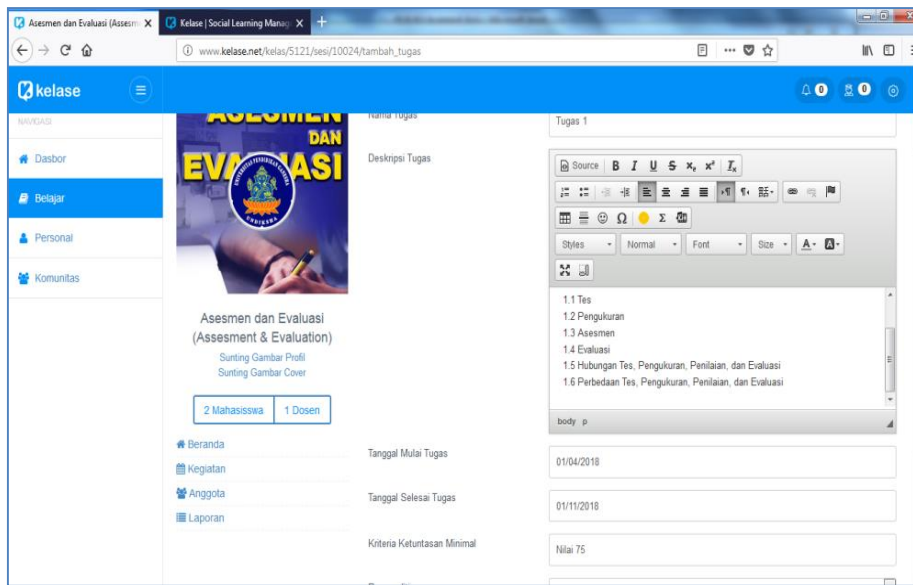
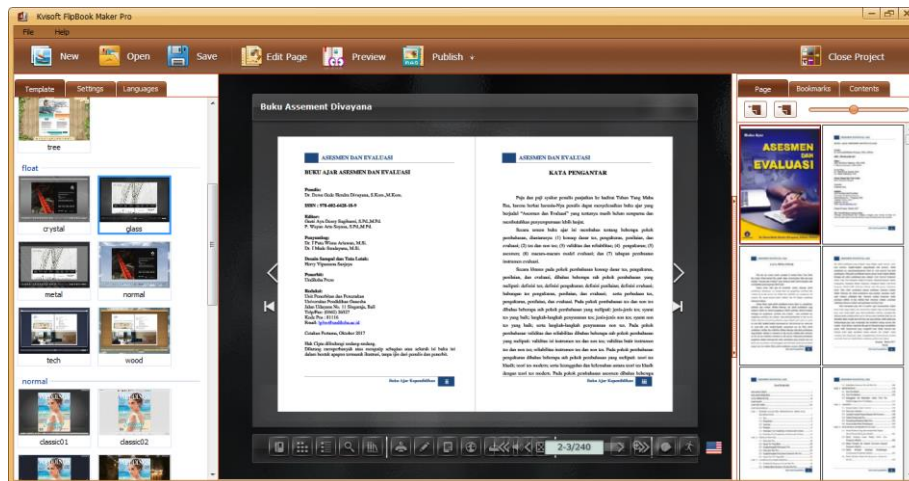


Figure 2. Design of assessment and evaluation digital book deployment pattern asynchronously through *Kelase* platform

Based on Figure 2, it can be explained that the digital book for Assessment and Evaluation course that has been formatted .swf uploaded to the Kelase platform so that later can be accessed by students through their laptop or smart phones as long as there is the internet connection. It shows that the design of deployment pattern asynchronous is well structured so that the indirect learning process can occur whenever and wherever the students are located without being limited by space and time. Trial results of two experts on the design of assessment and evaluation digital book based on Kvisoft Flipbook Maker with deployment pattern asynchronously through *Kelase* platform. Experts assessed the number of items as many as 16 items. Those trial results can be seen in Table 4.

Table 4. Trial Results on Assessment and Evaluation Digital Book

Respondents	Item-																Σ	Quality Percentage
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		
Expert-1	4	4	5	4	5	5	4	5	5	4	5	5	5	5	4	4	73	91.25%
Expert-2	5	4	4	5	4	4	5	4	4	4	4	5	4	5	4	5	70	87.50%
	Average																	89.38%

Based on Table 4, it can be explained that the average percentage of design quality of assessment and evaluation digital book made using Kvisoft Flipbook Maker application and with asynchronous deployment pattern to students majoring in informatics education, Universitas Pendidikan Ganesha of 89.38% means the quality of digital book formed was included in the good category, because when compared with the categorization found at the achievement level of five scales, the average percentage of digital book quality in the percentage range of 80-89% was included in good category.

The findings obtained from the results shown in Table 4 are in items 2, 10 and 15, where item 2 questions about aspects of learning material, item 10 about aspects of design view, and item 15 about aspects of completeness of digital book features. The maximum assessment score given by two experts on those three items was still at score 4, so it is necessary to encourage the effectiveness of the aspects shown in those items.

The results of this research have been able to provide answers from research obstacles previously conducted by Prasetya, Irianto, and Patmanthara in 2016, which through this research has been able to show ease in making digital books using Kvisoft Flipbook Maker when compared with making digital books using e-pub that requires specific skills about information technology. The results of this research have also been successful in proving and strengthening the results of research conducted by Suryani, Ruhimat and Ningrum in 2015, which by using Kvisoft Flipbook Maker application to create the assessment and evaluation digital book can also produce interactive digital textbooks equipped with multimedia elements. Although the trial results on design of assessment and evaluation digital book have shown good category, but still founded obstacles in this research, including: (1) the test involves only two experts, so the percentage of digital book quality is still less than optimal level, (2) the review of assessment and evaluation material content is still superficial in its discussion because it only comes from one textbook.

4. Conclusion

Generally, the design of assessment and evaluation digital book made using Kvisoft Flipbook Maker is in good quality because it has been packaged in an interesting and interactive way, to enhance the spirit of students to read the book. The design of assessment and evaluation digital book deployment patterns using the *kelase* platform facility has also been classified in good quality because it has been able to provide convenience to students in accessing digital books online whenever they want and wherever they are. The future work can be done to solve the obstacles found in this research, such as (a) to get the maximum percentage of digital book quality then it should be tested by involving at least 3 experts, so the result of the assessment obtained more accurate; (b) to obtain a higher quality digital book with deeper and sharper material coverage, then reference source that is used should be more than one textbook.

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