

## DEVELOPING INTERACTIVE MEDIA FOR ASSESSMENT AND EVALUATION COURSE

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### ABSTRAK

Penelitian ini bertujuan untuk mengembangkan dan mengimplementasikan media interaktif mata kuliah asesmen dan evaluasi. Mata kuliah asesmen dan evaluasi merupakan salah satu mata kuliah penting yang harus dikuasai peserta didik sebagai calon guru. Pengembangan dan perbaikan konten serta pengembangan media mata kuliah asesmen dan evaluasi terus dilakukan guna memberikan pelayanan secara akademik yang optimal kepada mahasiswa dalam pembelajaran daring di masa pandemic covid-19. Salah satu alternative yang bisa dilakukan adalah dengan mengembangkan media interaktif berbasis articulate storyline yang terintegrasi dengan e-learning moodle. Model yang digunakan dalam pengembangan media interaktif ini adalah ADDIE, yaitu (Analyze, Design, Development, Implementation, Evaluation). Berdasarkan analisis kurikulum dan silabus mata kuliah asesmen dan evaluasi, maka dijabarkan menjadi lima kegiatan belajar, dengan penjabaran sebagai berikut: (1) Kegiatan belajar 1: Konsep dasar evaluasi dan asesmen, (2) Kegiatan belajar 2: Skala pengukuran dan Transformasi Data, (3) Kegiatan belajar 3: Penyusunan tes, (4) Kegiatan belajar 4: Pengembangan Instrumen evaluasi jenin non tes, (5) Kegiatan belajar 5: Analisis butir tes dan non tes serta contoh implementasinya. Kelima kegiatan belajar tersebut dirancang dengan model Computer Assisted Instruction (CAI). Dalam implementasinya di e-learning, setiap kegiatan belajar terdiri dari beberapa Bab. Kemudian, setiap kegiatan belajar dilengkapi dengan file Pdf, video animasi, forum, tugas individu/project serta media interaktif berbasis articulate storyline.

**Kata kunci** : media interaktif, asesmen dan evaluasi, e-learning

### ABSTRACT

*This research aimed to develop and implement interactive media assessment and evaluation courses. Assessment and evaluation courses were the essential courses that students must master as prospective teachers. The development and improvement of content and media development of assessment and evaluation courses continued to be carried out to provide optimal academic services to students in online learning during the covid-19 pandemic. One alternative that could be done was to develop an interactive media-based articulate storyline that integrates with e-learning moodle. The model used in interactive media development was ADDIE (Analyze, Design, Development, Implementation, Evaluation). Based on curriculum analysis and syllabus of assessment and evaluation courses, then described into five learning activities, with the following description: (1) Learning activities 1: Basic concepts of evaluation and assessment, (2) Learning activities 2: Scale of measurement and Data Transformation, (3) Learning activities 3: Preparation of tests, (4) Learning activities 4: Development of non-test jenin evaluation instruments, (5) Learning activities 5: Analysis of test points and non-tests and examples of implementation. The five learning activities were designed with Computer Assisted Instruction (CAI) model. In its implementation in e-learning, each learning activity consists of several chapters. Then, each learning activity was equipped with Pdf files, animated videos, forums, individual tasks/projects, and articulate storyline-based interactive media.*

**Keywords** : Interactive Media, Assessment and Evaluation, e-learning

## 1. INTRODUCTION

Assessment and evaluation courses are essential courses that students must master as prospective teachers. Assessment and evaluation courses discuss the concept, conduct assessments, and objectively evaluate students' ability (students) based on the applicable curriculum. Therefore, several important indicators in this course, including understanding related to the preparation of tests that include objective tests and essays, understanding related to non-test preparation (checklist, portfolio, interview draft), steps to validate the instrument, assessing the reliability of the instrument, effectiveness of casting, test reliability, and difficulty level of the test.

Development and improvement of content and media development of assessment and evaluation courses continue to be carried out to provide optimal academic services to students [1]. Especially in this pandemic covid-19 period where the government has circulated letter number No. 4 of 2020 on the Implementation of Education in the emergency period of Coronavirus Disease (Covid-19), has obliged the learning process to be conducted in full online. Therefore, this situation becomes a challenge for all educators to provide media as attractive as possible with various platforms to maintain student motivation in learning, so that the quality of the study results remains good.

In fact, media is a tool used in the learning process. According to the AECT Task Force, the word "media" is the plural form of "medium", which comes from the Latin "medius", meaning "middle". In the Great Dictionary of The Indonesian Language, the word "medium" can be interpreted as "between" or "medium". Media understanding leads to something that delivers / forwards information (messages) between the source (the messenger) and the recipient of the message [2]. Media is any form and channel that can be used in the process of presenting the information. Learning media is everything that can be used to channel messages (learning materials) to stimulate students' attention, interest, thoughts, and feelings in learning activities to achieve specific learning goals. Levie &Lenzt presents four functions of learning media, especially visual media [1], namely:

### **a) Attention Function.**

The function of visual media attention is to attract and direct students' attention to concentrate on the lesson's content related to the visual meaning displayed or accompanying the text of the lesson material.

### **b) Affective Function.**

The affective function of visual media can be seen from the level of enjoyment of students when studying (or reading) illustrated text. Visual images or emblems can evoke students' emotions and attitudes.

### **c) Cognitive Function.**

The cognitive function of visual media is to facilitate the achievement of learning objectives to understand and remember information or messages through visual symbols or images.

### **d) Compensator Function.**

The learning media compensatory function provides context to understand the text helping weak students organize the information in the text and remember it again. In other words, learning media serves to accommodate weak and slow students to accept and understand the content of lessons presented with text or presented verbally.

Along with the development of computer technology, both hardware and software aspects also affect the outcome of media [4]. The media that is now a trend is interactive [2]. Interactive media supports the interaction between media with media users (humans) through the help of computers, mice, keyboards, and so on [3]. There are several advantages of interactive media, namely: (1) Can display sounds and images at once and respond to user actions, (2) Can do learning when it cannot be done directly [7]. Interactive multimedia has its advantages because it is imperative in learning when it cannot be done directly. For example, in the event of the COVID19 pandemic that causes classroom learning to be cancelled and teachers unable to teach students directly. [8] In these conditions, learning is done with interactive multimedia, such as with teleconferences and learning sites on the internet. Learning sites can respond to users when a user selects a specific subject or [9] One of the software that can be used to create interactive media is an articulate storyline.

The articulate storyline is one of the superior software to create interactive [10] The articulate storyline is a multimedia authoring tool that can create learning tools to interact with content formed

from a combination of text, images, sound, animation. Moreover, the articulate storyline is one learning media that can package learning involving direct learners so that students are actively engaged in learning. The software is continually updated with new features, including Articulate Storyline version 3. Unlike Articulate Storyline version 2, Articulate Storyline 3 has accessibility support in HTML5 output. A font find and change feature is accessible via tablet or smart phone, can direct objects to the motion path, etc. Using Articulate Storyline 3 works to customize on every device without manual and is powerful enough to be used by experts, but it's easy for beginners to create interactive learning. Its use is easy to apply in learning. It is conducive for learning designers from expert to beginner level and equipped with superior features, such as movie, trigger, picture, timeline, exciting character compared to other[11] software. Articulate Storyline 3 is a device that can compose presentations, as it holds the same position as Microsoft PowerPoint. From the above exposure, the articulate storyline is one of the software that can create interactive multimedia learning from a combination of text, images, audio, video, animation by packaging the learning that is used as content and involve students to be able to interact directly. [13] Articulate storyline-based interactive media can be used as an alternative in today's learning process.[12].

In the research of interactive media development assessment and evaluation based on articulate, the interactive media developed is integrated with the e-learning of the Ganesha University of Education using moodle platform. Hopefully, in the results of this study, can be an alternative student in following lectures online to better understand with articulate storyline visualization.

## 2. METHOD

The method used in this research was a research and development (R&D) method that adapted the ADDIE model (Analyze, Design, Development, Implementation, Evaluation). This model was chosen because the ADDIE model is often used to describe a systematic approach to instructional development. The procedure of product development with the ADDIE model could be seen in figure 1.

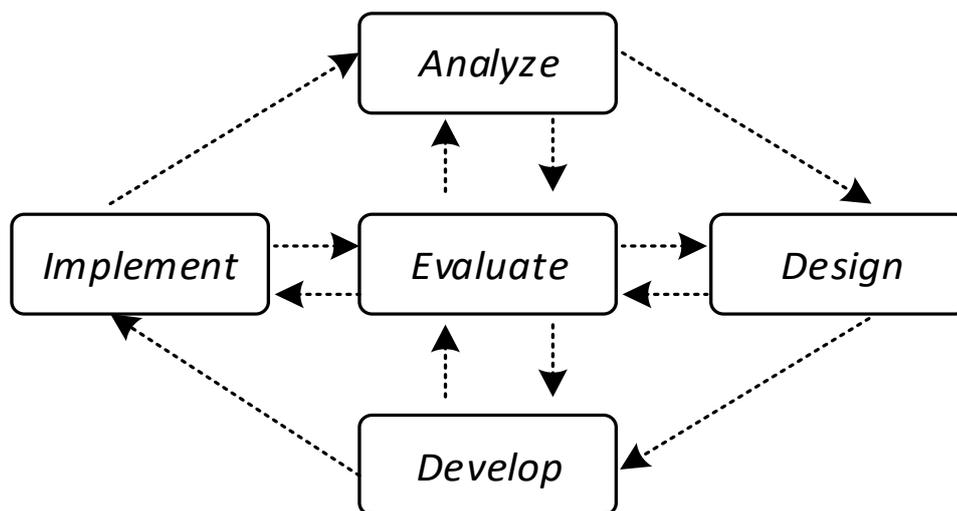


Figure 1. ADDIE Model Stages

### A. Analyze Stage

In detail at the analysis stage, namely content needs analysis and software needs analysis.

#### a) Content Need Analysis

At this stage, the analysis activities carried out were analysis characteristics of the courses conducted by analyzing the syllabus of assessment and evaluation courses.

#### b) Software Needs Analysis

Needs analysis at this stage aimed to perform functional needs analysis, non-functional needs analysis, and system analysis required and able to be done by articulate storyline software application.

## **B. Design Stage**

Activities at this stage consisted of designing interactive media interfaces and storyboarding.

## **C. Development Stage**

Development steps at this stage included preparing materials, evaluation, development of interactive media, and learning support features required by lecturers and students. The result at this stage of development is a teaching media product structured according to the applicable competencies.

## **D. Implementation Stage**

In implementing the use of interactive media, some software and hardware specifications used were as follows.

### **a) Software Requirement**

1. Operating System: Windows XP Service Pack 3

### **b) Hardware Requirement:**

1. Monitor with 1024 x 728-pixel resolution
2. 512 MB RAM
3. Processor Pentium IV 3.0 GHz
4. VGA minimum 128Mb
5. 1 GB free Hardisk Space
6. Sound card and speakers/ headset

## **E. Evaluation Stage**

At this stage, only formative evaluation was used, which aimed to collect data on the effectiveness and efficiency of the media to achieve the set goals. The data was intended to improve and improve the media to be more effective and efficient. The formative evaluation consisted of an expert review of content, learning design and media. This research was conducted in the Department of Informatics Engineering Education, Faculty of Engineering and Vocational, Ganesha University of Education. System development was carried out at LCI (Laboratorium of Culture Informatics), Department of Informatics Engineering Education.

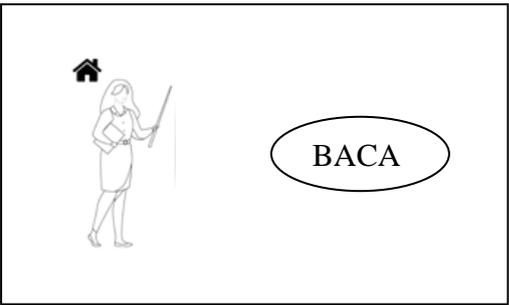
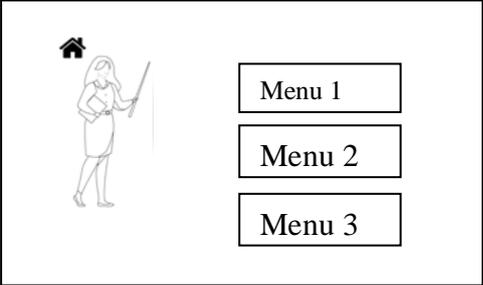
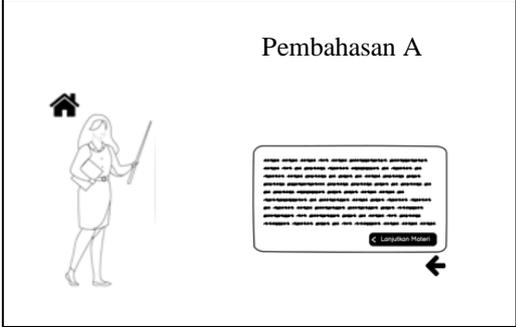
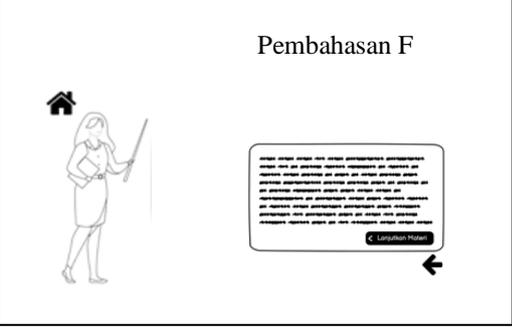
## **3. RESULTS AND DISCUSSION**

The development of interactive media for the assessment and evaluation course aimed to:

1. Adding students learning resource
2. Visualize assessment and evaluation course material.
3. As an alternative media in online learning during the Covid-19 pandemic.

Developing interactive media assessment and evaluation courses begins with the design of the interface and the creation of storyboards. The storyboard was a series of sketch drawings that present the plot of a story as a planning tool in filming or advertising that combines narrative and visuals. [17] The storyboard was an overview of the overall scenario or activity of the application [18]. The storyboard design and media implementation described in table 1.

**Table 1.** The storyboard design

No	Content Name	Development Result
1.	<b>Homepage</b>  This page was the start page; students click the “BACA” button before entering the material.	
2.	<b>Main Menu Page</b>  The main menu page contained materials discussed in interactive learning content. Later, students will be directed to the discussion material A first, then continued until the last.	
3.	<b>Discussion Material Page</b>  This page was a material discussion page. When students wanted to continue the discussion, then students can click the icon of the next arrow.	
4.	<b>Last Material Page.</b>  After students learn the material, students were directed to study discussion material B by clicking the button that said continue the material and other materials. This was a complete learning concept.	

Based on curriculum analysis and syllabus of assessment and evaluation courses, it was described into five learning activities, with the following description:

1. Learning Activity 1: Basic concept of assessment and evaluation.
2. Learning Activity 2: Measurement scale and data transformation
3. Learning Activity 3: Test preparation
4. Learning Activity 4: Development of non-test evaluation instrument
5. Learning Activity 5: Analysis of test and non-test items and examples of their implementation

The five learning activities were designed with computer-assisted instruction (CAI) models. Computer-assisted Instruction (CAI) is a development of integrated technology, namely communication (interactive), audio, video, image appearance (image), which is packed with interesting[19]. In its implementation in e-learning, each learning activity consists of several chapters. Then, each learning activity was equipped with Pdf files, animated videos, forums, individual/project tasks, and articulate storyline-based interactive media (table 2).

**Table 2.** Interface e-learning of assessment and evaluation course

No	Content Name
1.	<b>Home Page</b>
2.	<b>Learning Activity 1:</b> Basic Concepts of Assessment and Evaluation
3.	<b>Learning Activity 2:</b> Measurement Scale and Data Transformation
4.	<b>Learning Activity 3:</b> Test Preparation
5.	<b>Learning Activity 4:</b> Development of non-test Evaluation Instrument
6.	<b>Learning Activity 5:</b> Analysis of test and non-test items and examples of their implementation

The following five learning activities published, interactive media with an articulate storyline developed into five (5) media integrated with the Ganesha University of Education e-learning. The explanation of interactive media and interface display Chapter 1: Basic concepts of evaluation and assessment can be seen in table 3.

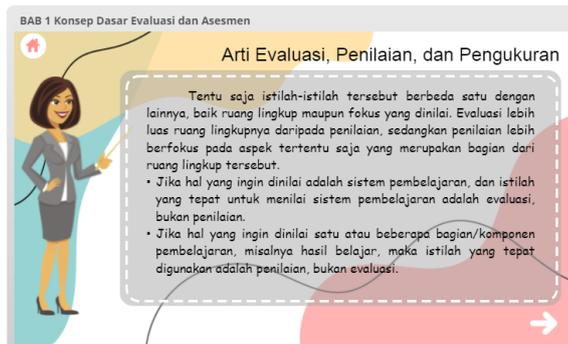
**Table 3.** Result of Interactive Media Development

No	Content Name	Development Result
1.	Home Page Interactive media display with the articulate storyline, if button "BACA" clicked then will display the image [2]	

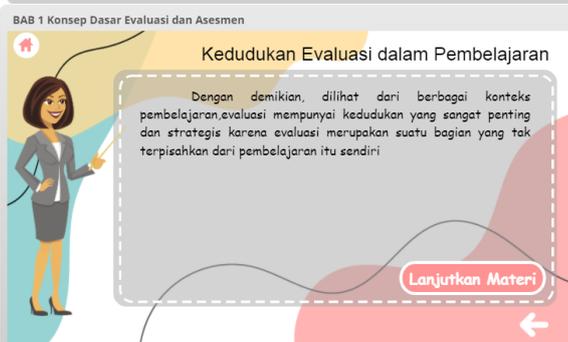
- In Chapter 1, there were six sub-materials, including: (1). The meaning of evaluation, assessment and measurement, (2). The position of evaluation in learning, (3). Objectives and Functions of learning evaluation, (4). Scope of learning evaluation, (5). General principles of evaluation, (6). Basic concepts of assessment.



- One of the Material Display: Meaning of Evaluation, Assessment and Measurement



- One of the Material Display: The Complaining of Evaluation in Learning



After the interactive media has been developed, the next stage is to carry out validation tests by media experts and learning designs. The media expert validation test and learning design got the results of Gregory's calculations which showed a validity level of 1.00 which was at the "Very High" level. Thus, interactive media for assessment and evaluation courses can be used as a learning resource in the assessment and evaluation learning process. However, the two experts also provide suggestions for consideration for the perfection of the developed interactive media. The suggestions given are: to improve the order of the menu on the home page, to improve the composition of the text and to correct the writing that is still wrong. Furthermore, the researchers made improvements from the suggestions given for the perfection of interactive media products for assessment and evaluation courses.

Data on student responses to the application of interactive media for assessment and evaluation courses totaled 46 students. Student responses to the application of interactive media for assessment and evaluation courses were collected using questionnaires or student response questionnaires. The questionnaire used on a Likert scale with the choices of Strongly Agree, less Agree, Disagree, Disagree, and Strongly Disagree. For negative student responses, the score is reversed with positive items. The distribution of response questionnaires to students was carried out at the end of the study to determine student responses or responses to the use of interactive media for assessment and evaluation courses. From these results obtained data regarding the number of student response scores of 2690. The average score of student responses was analyzed by the formula:

$$\begin{aligned}\bar{X} &= \frac{\sum X}{N} \\ \bar{X} &= \frac{2690}{46} \\ \bar{X} &= 58.47\end{aligned}\tag{1}$$

The total items of student response questionnaire questions are 15 items. Based on these results, it can be determined that the ideal highest score is 75 and the lowest ideal score is 15. Student responses are categorized into 5, namely very positive, positive, quite positive, less positive, and very less positive. Thus, the ideal mean (IM) and ideal standard deviation (ISD) can be calculated as follows:

**a. Ideal mean (IM)**

$$\begin{aligned}\text{IM} &= \frac{1}{2} (\text{ideal highest score} - \text{ideal lowest score}) \\ \text{IM} &= \frac{1}{2} (75 + 15) \\ \text{IM} &= \frac{1}{2} (90) \\ \text{IM} &= 40.00\end{aligned}\tag{2}$$

**b. Ideal standard deviation (ISD)**

$$\begin{aligned}\text{ISD} &= \frac{1}{6} (\text{ideal highest score} - \text{ideal lowest score}) \\ \text{ISD} &= \frac{1}{6} (75 - 15) \\ \text{ISD} &= \frac{1}{6} (60) \\ \text{ISD} &= 11.6\end{aligned}\tag{3}$$

Guidelines for classifying student responses to the use of interactive media for assessment and evaluation courses are stated in Table 4.

**Table 4.** Criteria for Classifying Student Responses

Score Range	Category
$MI + 1,5 \text{ SDI} \leq \bar{X}$	very positive
$MI + 0,5 \text{ SDI} \leq \bar{X} < MI + 1,5 \text{ SDI}$	positive
$MI - 0,5 \text{ SDI} \leq \bar{X} < MI + 0,5 \text{ SDI}$	quite positive
$MI - 1,5 \text{ SDI} \leq \bar{X} < MI - 0,5 \text{ SDI}$	less positive
$\bar{X} < MI - 1,5 \text{ SDI}$	very less positive

Based on table 4, the distribution of student response scores is obtained which is presented in Table 5.

**Table 5.** Distribution of Student Response Scores

Score Range	Category	Frecuency	Persentase
$58 \leq \bar{X}$	very positive	40	87
$46 \leq \bar{X} < 58$	positive	6	13
$34 \leq \bar{X} < 46$	quite positive	0	0
$23 \leq \bar{X} < 34$	less positive	0	0
$\bar{X} < 23$	very less positive	0	0
<b>Jumlah</b>		46	100

Based on Table 5, the data on student responses to the use of interactive media for assessment and evaluation courses can be presented a histogram, in Figure 2.

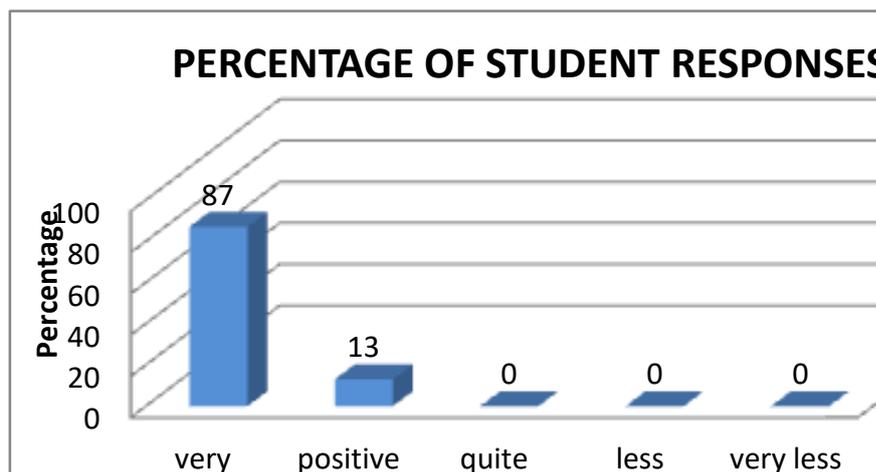


Figure 2. Histogram of Student Responses

In Figure 2 it can be seen that student responses to the use of interactive media for assessment and evaluation courses were 87% in the very positive category, 13% in the positive category, and as many as 0% in the moderately positive category, and there were no student responses in the less positive and very less positive categories.

#### 4. CONCLUSION

The development of interactive media assessment and evaluation courses has become a source of student learning, helping to visualize assessment and evaluation course materials as well as one of the alternative media in online learning during the covid-19 pandemic. Based on curriculum analysis and syllabus of assessment and evaluation courses, it was described into five learning activities, with the following description:

Learning Activity 1: Basic Concepts of Assessment and Evaluation

Learning Activity 2: Measurement Scale and Data Transformation

Learning Activity 3: Test Preparation

Learning Activity 4: Development of non-test Evaluation Instrument

Learning Activity 5: Analysis of test and non-test items and examples of their implementation

The five learning activities were designed with Computer-Assisted Instruction (CAI) models. In its implementation in e-learning, each learning activity consists of several chapters. Then, each learning activity was equipped with Pdf files, animated videos, forums, individual tasks/projects, and articulate storyline-based interactive media. Student responses to the use of interactive media for assessment and evaluation courses were 87% in the very positive category, 13% in the positive category, and as many as 0% in the moderately positive category, and there were no student responses in the less positive and very less positive categories.

As a follow-up to this interactive media development research, experimental research can be conducted to determine the effectiveness of the media. In addition, classroom action research, survey research, and other expo facto research can also be conducted to determine the impact of using interactive media.

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