The Development of Interactive E-Module Using Flipbookmaker for English Structure Learning at an Indonesian University


Abstract: This study aims to develop an interactive e-module for English Structure course to support digital learning in the English Study Program at Universitas Riau, Indonesia. The research used a Research and Development (R&D) approach and applied the ADDIE model consisting of five stages: analysis, design, development, implementation, and evaluation. The results of the study indicate that the developed e-module has good quality, both in terms of its materials and media, and is eligible to be utilized as a digital learning resource for English Structure course. Therefore, it can be concluded that the e-module has a very good quality, both in terms of its materials and media, and is eligible to be utilized as a digital learning resource for Pre-Intermediate Structure course in the English department of Universitas Riau, Indonesia.

**Keywords:** research development, interactive e-module, animated video, interactive quiz, pre-intermediate structure, flipbookmaker.

**INTRODUCTION**

This century's learning can no longer be done conventionally. Lecturers are required to adapt to the development of times (Dudung, 2018; Novita & Sundari, 2020). The adaptation can be in the form of adjustments to teaching methods, content or teaching materials, evaluation formats and media formats that are used. Lecturers who still use the old ways (by giving more lectures and using outdated learning resources, for example) in class will definitely be left behind and become irrelevant.

Today’s lecturers are required to adapt their instructional process to the development of digital technology as people are currently living in the era of the Industrial Revolution 4.0 which is marked by the massive internet network around us. Thus, lecturers must be able to take advantage of the development of the internet technology for the effectiveness of achieving course outcomes, one of which is by digitizing content and the lecture process (Prayogy & Aesthetics, 2019). Second, we are still living in a pandemic era where many course activities are still limited in face-to-face form. So, digitizing content and learning media become urgent and very relevant. Munir et al (2021) postulate that online learning interaction is a must in the Covid-19 pandemic era.

The importance of lecturer adaptation to the development of the digital world, of course, also applies to lecturers of the English Education study program, Universitas Riau. The problem is that so far there has not been many (to say nothing) course contents developed by lecturers of English study programs in order to support digital learning, whether during the pandemic or before the pandemic. Therefore, it is necessary to innovate the learning resources to fill this void.

In the curriculum structure of the English Education Study Program, Universitas Riau, one of the courses taught to prospective English graduates is the Structure course. This is a course that contains studies and discussions on how language is constructed by following the rules that apply in English grammar, starting from aspects of words, phrases, sentences, and paragraphs, to a discourse.

This course is divided into three levels according to students' abilities. First semester students will take a course called Pre-Intermediate Structure. Then, in the second semester, students will be given an Intermediate Structure. Then after graduating in this course, students are entitled to take Post Intermediate Structure. After completing these three courses, English students are expected to have a good understanding of how to construct an English text by following the rules of English grammar.

The ability to master the structure will affect the competence and proficiency of an English learner. However, understanding the structure and/or grammar of English is often an obstacle for many Indonesian students and students who study English as a foreign language (Renandya, Hamied, & Joko, 2018;
Toba, Noor, & Sanu, 2019). The causes can be complex. This can be related to the teaching methodology of lecturers who are not yet communicative. It could also be due to the learning media that do not fully support student learning styles. So learning grammar becomes boring and even scary.

Considering the importance of mastering grammar in communicating in English and also paying attention to the very lack of digital and interactive-based learning resources and/or teaching materials that can be used by lecturers and students in the English Study Program, Universitas Riau, this study was conducted. We developed course materials in the form of interactive e-modules by utilizing the Flipbookmaker software. Flipbook maker is software that has a function to open every page to be like a book. Flipbook maker software can create and convert pdf, image/photo files into a book or physical album when we open it per page. The final result can be saved in .swf, .exe, .html formats (Wijayanto, 2011 in Pornamasari, 2015). By using flipbook maker software, students will be more interested in learning because it contains more attractive displays and student achievement can increase (Pornamasari, 2015).


In terms of English learning, there are still very few of research found concerning developing an interactive e-module based flipbook. Nurjamah et al. (2021), for example, developed a flipbook e-module for the Appreciation and Fiction Prose Studies course and gained positive results. In addition, a study by Sa’adah et al. (2022) also revealed that the use of flipbook e-module to teach English lessons is found to be effective and fun. Some students feel like it is an interesting and practical way of learning, which allows them to study on their own and at their own pace (Lestari et al., 2022). The fact also clearly shows that the students can utilize their mobile phones makes it easier for them to study at anywhere and anytime. This way is also helpful, easy, and makes lecturers easier to observe the students (Munir et al, 2021).

Specifically for English structure, Purwaningsih et al. (2022) designed a prototype flipbook learning source for teaching English ‘Simple Past Tense’. The results indicate that learning using this media is feasible and manages to improve the learning outcomes of the students. The students claimed that studying using it does not make them easily get bored. The reason is because there are less text in the e-module and more various types of media, such as images and videos (Rahmawati et al., 2022; Purwaningsih et al., 2022).

Considering the positive research findings regarding the use of interactive e-module using flipbook maker and the fact that no one has applied it to the English Education Study Program, especially for Structure learning, the researchers then decided to conduct a study titled “Development of Interactive E-Module Using Flipbook Maker for English Structure Learning at Indonesian University”. 

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METHODS

The research used a Research and Development (R&D) approach. More specifically, this study uses the ADDIE model developed by Rusdi (2018). The ADDIE model consists of five stages, namely analyze, design, development, implement and evaluate. In this study, the researcher only conducted research up to the implementation stage but was limited.

The research process and steps can be seen from the following figure:

Figure 1: Development flow of interactive e-module with the modified ADDIE model from Rusdi (2018)

The analysis phase was carried out on aspects of curriculum analysis and available resources related to the English Structure course. The results of the curriculum analysis showed that development was only carried out on three topics from the course syllabus or Rencana Pembelajaran Semester (RPS), namely “Simple Present Tense with TO BE”, “Singular and Plural Nouns”, and “Simple Present Tense with Verbs”. The product (content) developed was an electronic module (e-module) which consisted of explanations of text-based lecture material and animated videos and interactive quiz-based exercises. Before these two materials were integrated with the e-module, both materials were validated by material experts and media experts.

Aspects of the assessment assessed by the validator are made in the form of a scoring scale of 1-4 where 1 is very bad/not appropriate, 2 is fairly good, 3 is good, 4 is very good. The research results are presented in table form and analyzed descriptively. While the validity criteria refers to the formulation of Sugiyono (2016) as shown in the following table:

<table>
<thead>
<tr>
<th>No</th>
<th>Interval Mean Score</th>
<th>Validity Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>3.25 x 4</td>
<td>Very valid</td>
</tr>
<tr>
<td>2</td>
<td>2.5 x &lt; 3.25</td>
<td>Valid</td>
</tr>
<tr>
<td>3</td>
<td>1.75 x &lt; 2.5</td>
<td>Not valid</td>
</tr>
<tr>
<td>4</td>
<td>1 x &lt; 1.75</td>
<td>Invalid</td>
</tr>
</tbody>
</table>

(Sugiyono, 2016)

After being declared valid, both videos and quizzes were inserted into the product or e-module, which was then developed based on the Flipbook maker application. This e-module was then re-validated by media experts and material experts before being tested on the limited group. At the implementation stage, the effectiveness of the module content is tested on the target users. At this stage, dissemination of the developed e-module was also carried out. Furthermore, opportunities were explored to develop content on other materials according to the needs of English Language Education students at the Universitas Riau.
RESULT AND DISCUSSION

Result

The development of e-modules with animated videos and interactive quizzes based on flipbook maker which used the ADDIE development model consisted of five stages, namely analyze, design, development, implementation, and evaluation which are described as follows:

a. Analyze

At this stage, the analysis carried out was analyzing the needs of students and lecturers in the availability of e-modules as one of the instructional media in English Education Study Program. This analysis was conducted by observing and reviewing literature related to the need for interactive digital learning media for contemporary learning.

The results of our observations were that there is very limited number of interactive digital instructional media that can be used by lecturers and students in learning pre-intermediate structure courses in the English Language Study Program. This scarcity is not exclusive to the Structure class. The same situation happens in other subject where most of materials used by the lecturers are still paper based or printed materials. Although some lectures already used some online media, they tend to use some learning resources which are already available online, not the ones developed by themselves systematically.

In fact, this interactive digital medium is very much needed by lecturers and students to enrich learning media that can allow students to learn independently and can also increase students’ interests in the learning process. A systematic literature review conducted by Wulandari et al (2021) found that the use of interactive e-modules can increase students' learning motivation, students' scientific literacy skills, student learning outcomes, students' independence and students' critical thinking skills.

The next analysis was for the curriculum document in the English Education Study Program, Universitas Riau. The Structure course at the university is divided into three course levels, namely Pre-Intermediate Structure, Intermediate Structure, and Post Intermediate Structure. This research only focused on the first level (Pre-Intermediate Structure) which is usually offered to first semester students in English Study Program. Thus, this course can be regarded as a basic course related to grammar for students of the English language study program at the Universitas Riau.

Then, the analysis was carried out on the Course Syllabus (RPS) document developed by the Pre-Intermediate Structure lecturer. Of the many course topics in Pre-Intermediate Structure course which were divided into sixteen meetings, including midterm and final exams, we decided to focus on developing three topics of course materials, namely: Simple Present Tense with To Be, Singular and Plural Nouns, and Simple Present Tense with Verbs. These three topics are in the first, second and three meetings in the course syllabus for the Pre-Intermediate Structure course.

b. Design

Several things done at this design stage were selecting the content for the media, choosing software, drawing flowcharts, and writing storyboards. The media content selection was carried out based on the previous stage, adjusted to the course syllabus in the English Education Study Program. Three topics have been decided to be developed as discussed in the analysis stage above. In creating the instructional media, three software were used; Pawtoon software for animation video development, Wordwall for interactive quiz development, and flipbook maker for e-module development.

More specifically, the flow of the design carried out by researchers can be seen in the following four stages:

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As shown in Figure 2, the e-module development design consists of four stages:

1) **Designing animated video-based instructional media**
   This animated video contained a brief explanation (about 2 minutes) related to the material that has been set. This video later became a part of an interactive e-module that is being developed. Video development was done by writing a video script, recording the voice, and adding animations that were relevant to the video material. The whole process of making videos was done with Pawtoon software.

2) **Designing interactive quiz**
   The content of the interactive quiz was several practice questions on the topics that were explained in the animated video. This quiz could be done by students independently and was designed to directly provide feedback to students about whether their answers were right or wrong. Quizzes were designed as attractive as possible so that they also increase student interests in the learning process. This quiz was developed using Wordwall software and consisted of 15 multiple choice questions and 5 true/false questions for each material that was developed. Thus there were 45 practice questions in total.

3) **Designing interactive (text-based) e-modules**
   In parallel with animated videos and interactive quizzes, at this design stage, a text-based e-module design was also carried out related to three pre-selected Pre-Intermediate Structure materials. At this stage, the e-module design was still based on word documents and pdf files before later being integrated with animated videos and interactive quizzes using flipbook maker software.

4) **Designing the integration of animated videos, interactive quizzes into interactive e-modules**
   This was the final design stage of the e-module development where animated videos, interactive quizzes that were previously developed separately were then combined into one flipbook maker-based interactive e-module document. So that students who use e-modules can access all media in one platform.

c. **Development**
   At this stage, content development was carried out according to the designs made in the previous stage until the product was ready for validation. Validation was carried out to determine the feasibility of the media before it was applied or used by lecturers and students. Validation was carried out by a material expert and a media expert. Some examples of the animated video instructional media as part of the development of interactive e-modules can be seen in Figure 3 to Figure 8.
After the product was developed, validation was carried out to determine the feasibility of the product before the trial phase was carried out. 2 lecturers (validators) as were selected as material expert and media experts who have experience in assessing aspects of product design. Each validator was asked to rate and give input on the animated videos and interactive quizzes that were developed, so that the level of validity could be known. The assessment aspects were in the form of material substance, learning design, visual communication display and product utilization.

The assessment by the validators were made in the form of a scoring scale of 1–4 where 1=very bad or not appropriate, 2=fairly good, 3=good, and 4=very good/appropriate. The research results were presented in a table form and analyzed descriptively. Meanwhile, the validity criteria referred to the formulation of Sugiyono (2016) as shown in Table 1.

The following are validation results from a media expert and a materials expert for animated video products and interactive quizzes:

1. **Animation Video Product Validation**

   The first product is the animated videos. The following is the validation of the animated videos by the material expert and the media expert:
Figure 9: Total average scores of animated video validation

Figure 9 shows that the animated video of the first material has an average validation score of 3.55 (each (3.6) from the material expert, and (3.5) from the media expert), classified as very valid. The second video has an average validation score of 3.65 (each (3.7) from the material expert, and (3.6) from the media expert), included in the very valid category. The last animated video got an average validation score of 3.45 (each (3.7) from the material expert and (3.2) from the media expert), categorized as very valid. In summary, all of the animated videos are very valid according to the material expert and the media expert.

2. Interactive Quiz Product Validation

The second product is the interactive quizzes. The following is the validation of the interactive quizzes.

As can be seen from Figure 10, the interactive quiz for the first material has an average validation score of 3.8 (each (4.00) from the material expert, and (3.6) from the media expert) with a very valid category. The second quiz has an average validation score of 3.9 (each (4.00) from the material expert, and (3.8) from the media expert), also included in the very valid category. The last interactive quiz got an average validation score of 3.85 (each (4.00) from the material expert and (3.7) from the media expert), categorized as very valid. In summary, all of the interactive quizzes are very valid according to the material expert and the media expert.

Based on the data elaborated above, the total validation scores for the three animated videos and the three interactive quizzes were high. This means that the videos and quizzes are ready to be integrated to make an electronic module (e-module) for the chosen course in this research project, Pre-Intermediate Structure. The material and media experts have agreed on the quality of these animated videos and interactive quizzes as useful instructional media. Astuti et al (2021) developed animated videos for elementary school science and found out that these media can increase students’ learning outcomes and can be utilized to facilitate critical thinking activities for students. Animated videos can help students to understand better, especially slow learners, because they can play back the video to listen more explanations and the animations (Nurani et al: 2021, Morsi: 1984). Similar to animated videos, interactive quizzes bring positive impacts to students learning. They bring joy to learning and makes students more enthusiastic because they are motivated to complete the quizzes to know their results which are presented right afterwards (Diana et al.: 2021). Finally, it is important to note that in developing these media, feedbacks from experts are helpful for researchers in developing instructional media with more
appropriateness, effectiveness and usability (Gusteti et al. : 2021).

3. **E-Module Product Validation**

Once the animated videos and the interactive quizzes have been declared valid, they are then integrated into the e-module. They then become part of sections of the e-module. The e-module itself was simultaneously developed with the animated videos and interactive quizzes. Some parts of the e-modules can be seen from the following figures:

Figure 11: Front cover of the e-module

Figure 12: Table of content of the e-module

Figure 13: Animated video-based explanation

Figure 14: Text-based material explanation
The whole e-module is published online at English Pre-Intermediate Structure so it can be accessed and used by students and lecturers anytime.

The next step is the validation of the e-module by the material and media experts. The results of the validation are described as follows:

3.1 Material Expert

Validation by the material expert includes aspect of content, linguistic aspect, and aspect of presentation. The results of the e-module validation from the material expert assessment are shown in Figure 11 below:

Based on the table above, it can be seen that the 'Content' aspect of the e-module got 3.93 (very valid), the 'Language' aspect received 4.00 (very valid), and the 'Presentation' aspect got 4.00 (very valid). Overall, the average score of the validation assessment by the material expert on the e-module is 3.96. With a maximum value of 4.00, it can be deduced that the materials in the e-module is categorized as 'Very Valid'.

3.2 Media Expert

Validation by the media expert includes aspect of screen design, aspect of ease of use, aspect of consistency, aspect of functionality, and aspect of graphic. The validation results can be seen as follows:

For the media expert's validation of the e-module, as shown in Figure 28, the aspect of 'Screen Design' got a score of 3.14 (valid), the 'Ease of Use' got 3.28 (very valid), the 'Consistency' got 3.33 (very valid), the 'Functionality' got 3.16 (valid), and the 'Graphic' got 3.28 (very valid). On the whole, the average score of the validation assessment by the media expert on the e-module is 3.23 out of a maximum value of 4.00, which can be interpreted as 'Valid'.

Thus, the combination of the two validations of both the material expert and the media expert on the developed e-module can be seen below:
d. Implementation

After the e-module has been validated by experts (material and media), the next stage is the implementation stage, which is the stage where the e-module is applied to the actual situation. The results of this trial are in the form of responses from the first semester students of the English study program, FKIP, Universitas Riau. The students, as respondents, were asked to fill in an assessment response to the e-module based on aspects of convenience (5 items) and aspects of attractiveness (5 items). The trial was conducted from October 3 to October 5, 2022, with a total of 20 respondents. The output of the student assessment of the e-module is as follows:

First of all, for the students' assessment of the e-module in the aspect of attractiveness, as shown in Figure 14, the indicator 'Display of learning media' scored 4.00 (very good), the 'Presentation of materials and questions in learning media' scored 3.70 (very good), and the 'Display of media as a learning medium' scored 3.55 (very good). Taken as a whole, the total average score of the attractiveness aspect of the e-module is 3.75, and this score can be interpreted as 'Very Good'.

Figure 15 displays that the score of the indicator of 'Clarity of the language use in the learning media' is 3.62 (very good) while that of the indicator 'Ease in learning media' is 3.60 (very good). Overall, the total average score of the convenience aspect of the e-module is 3.61, which can also be described as 'Very Good'.

Owing to this, the combined assessments by the student responses to the e-module in
terms of its attractiveness and convenience as a learning medium can be seen below:

Figure 21: The total score of the student assessment of the e-module

As can be seen in Figure 16, the average score of the student assessment of the e-module in the attractiveness aspect is 3.75 (very good), and that of the convenience aspect is 3.61 (very good). In total, the average score is 3.68 which can be interpreted as 'Very Good'. Therefore, it can be confirmed that the developed e-module is very good as a medium for studying Pre-Intermediate Structure.

Discussion

The eligibility of the Pre-Intermediate Structure E-Module has been tested in terms of its material and media. There are three products developed by the researchers; animated videos, interactive quizzes, and interactive e-module. According to the results of the validations by the chosen experts, all of the products are categorized as ‘very valid’, which means they all are very eligible and adequate to use as digital learning source and media to study English Structure.

The results of assessment by the students also exhibit that this flipbook e-module is very appealing and easy to use. The reasons are likely because learning using flipbook-based media like this keeps students focus and interest longer than the conventional learning method (Rahmawati et al., 2022) and are usually straight to the points of the topic lessons. As confirmed by Kustandi and Darmawan (2020), the learning and teaching process will run successfully if the media that being used manages to deliver the lessons accurately yet succinctly. In addition, the e-module developed was designed to be simple, yet appealing to see in order to attract and maintain the students’ attention and interest. This followed the theory claimed that teaching materials must be compelling, such as having attractive designs and layouts, so that students are motivated to study it (Herawati & Muhtadi, 2018; Sidiq & Najuah, 2020).

The Pre-Intermediate Structure E-Module consists of 25 pages with videos, images, and interactive quizzes. The videos designed are animated which is capable to to simplify and explain topics in a way that is extremely visual and easier for the brain to comprehend and memorize (Aprianti et al., 2018). Moreover, animated videos is claimed to be helpful to improve students’ self-confidence with their independent learning (Rahmawati et al., 2019). The images in the e-module are the examples of the topics. The researchers ensured that each topic has adequate number of examples so that the students have a better grasp of it after watching the video lesson. These visual examples are essential to increase the students’ comprehension of the material after it was being delivered (Afriyani, 2018; Nurjani, 2020). The interactive quizzes are exercises to test as well as deepen the students’ understanding of the lessons. The researchers chose interactive quizzes instead of the usual ones so that the students can access it online and automatically from the e-module. There are many advantages of interactive online quizzes, for instance increasing students’ involvement and engagement (Hillman, 2012), motivating students to complete assignments, promoting discussion participation (Purba, 2019), and improving exam performance (Brothen & Warmback, 2004; Johnson & Kiviniemi, 2009).
Munawaroh et al., (2020) affirmed that learning through flipbook-based e-module manages to improve student learning achievement, motivation, and attitudes. Moreover, through the use of this media in the classroom, students are stimulated to become more engaged in the learning process, to be inspired to learn, and to be curious about the lessons (Hendratmo, Yuwana & Astutik, 2021). Findings of this study have so far strengthened the findings and the accounts of the previous studies in the similar topics, emphasizing that an e-module developed using flipbookmaker is indeed a promising learning source to enhance language learning.

CONCLUSION

This research is to develop and design a learning source and medium, namely e-module, for English Structure at Pre-Intermediate level. The findings of the validations by the material and media experts indicate that the products developed, animated videos and interactive quizzes, are declared suitable to be used as learning media and valid to be integrated into an interactive e-module. Then according to the validations of the e-module by the material expert and the media expert, the e-module is confirmed as valid and eligible as a digital learning source for Pre-Intermediate Structure course at the English Education Study Program, Universitas Riau. The e-module developed by the researchers has been proven to have learning materials that meet the standards and attain the eligibility requirements as a learning source. From students’ responses, it was also discovered that the e-module is very appealing and easy to use for them to improve their understanding and skills of English structure.

ACKNOWLEDGMENTS

We thank the Institute of Research and Community Services of Universitas Riau that has funded this research under the contract number 1504/UN.19.5.1.3/PT.01.03/2022.

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