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# Developing An Interactive E-Module as Multimodal Learning Strategy in Fostering English Proficiency for High School Students

**Annisa Permata Islami, Eliwarti, Muhammad Syarfi**
*English Department Universitas Riau Pekanbaru, 28293, Indonesia*

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**A B S T R A C T**

Outdated teaching styles often lead to monotonous English classes in high school and affect students' enthusiasm in the learning process especially if the class is not equipped with technological developments. To address this challenge, this preliminary study designed and developed an interactive e-module with Environmental Context using the Flip Builder application as learning media for Explanation Text material to support English learning through multimodal learning strategies in senior high school. This study employed Research and Development approach and implemented ADDIE model (Analysis, Design, Development, Implementation, and Evaluation) as initial research techniques. Moreover, the final evaluation methods occurred to ensure the feasibility of the e-module. The result of this research was an interactive e-module that contains multimodal texts which include written texts, images, animations, videos and games to capture students' interest during the learning process. The validation results indicated that the e-module was valid for all aspects. Therefore, it can be inferred that the interactive e-module using the Flip Builder application on Explanatory Text material with environmental context for high school student was feasible to be implemented in schools.

## 1. Introduction

The fast pace and unpredictable of livelihood in 21st century demand the changes in all aspects of life including technology and education (Van Laar et al., 2020). Todays, in the digital era of teaching and learning, both teachers and students are crucial to adapt with technology in education. Teachers and students need to adapt to educational technology as it allows them to access a wider and diverse range of educational resources, increases interactivity in the learning process, and enriches the learning experience (Ifinedo et al., 2020). For teachers, technology enables the

* Corresponding author.
E-mail: annislami28@gmail.com
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presentation becomes more interesting and facilitates efficient classroom management. Meanwhile, for students, technology opens up access to personalized learning that suits individual learning styles and expands opportunities to develop digital skills that are crucial in this modern era (Mourlam et al., 2020).

Technology able to offer an interactive learning experience which is advantageous for English learning activity as it can increase students' active engagement in the learning process (ButarButar & Simatupang, 2020). Especially for high school students who have studied a variety of texts, they need learning media to improve their understanding. In explanation texts that contain explanations about natural phenomena, the use of only written texts can be ineffective. Therefore, a multimodal approach becomes very important. By utilizing this approach, such as the use of video, audio, animation, and interactive quizzes, students can gain a deeper and more thorough understanding of the material being taught (Reyes-Torres & Raga, 2020). This approach not only makes learning more interesting and relevant for students, but also assist the students overcome the potential difficulties in understanding complex concepts, such as natural processes in explanation texts (Reyes-Torres & Raga, 2020).

By applying multimodal approaches, such as using written text, video, audio and interactive quizzes, teachers can create a more dynamic and comprehensive learning experience for students (Qushem et al., 2021). This approach not only helps students understand the concepts taught in different ways, but also enables them to develop all-round English skills. Previous research shows that the use of multimodal texts can train students' metacognitive abilities, which play an important role in their thinking and learning success (Sharma et al., 2020), as well as impact reading (Jamil & Aziz, 2021), listening (Campoy-Cubillo & Querol-Julián, 2021), writing (Hafner & Ho, 2020), and speaking (Seftika et al., 2021) skills.

Unfortunately, although multimodal approaches have been proven effective in improving students' effectiveness and understanding in learning, many teachers still persist with traditional learning methods. Many students have difficulty in understanding complex concepts in explanatory texts, especially regarding natural phenomena, and often feel bored. When this is left unchecked, student boredom can hinder the learning process, as its effectiveness is strongly related to student interest. Students who learn with high motivation and enthusiasm tend to achieve more optimal learning outcomes (Alizadeh, 2016). Conversely, students who lack interest in English learning can have difficulty in achieving significant progress (Islami et al., 2019). Motivation continues to be a major concern in the context of English language learning, while learning strategies are influenced by self-efficacy and individual enthusiasm levels, which can be decisive factors in achieving good English skills (Klimova, 2011; Khodadad et al., 2016).

An additional problem that arises is the lack of media that adopt a multimodal approach to teaching explanation text to high school students. Previous research also shows that there are no studies that specifically examine the use of

multimodal approach in the context of explanation text for high school level. The lack of media that offers a combination of text, video, audio, animation and interactive quizzes on explanation text for high school students limits students' ability to respond to and understand the material thoroughly. This can result in low levels of student engagement and difficulty in internalizing and applying the information learned. In the face of this challenge, the development of learning media that uses a multimodal approach is needed to improve learning effectiveness and ensure better understanding for high school students in the study of explanation text.

Therefore, this research sees that the solution is to develop an interactive e-module that adopts multimodal learning strategies, such as the use of written text, video, audio, animation, and interactive quizzes on explanation text that contains environmental context. Research can fill the gap by leading to the development of e-modules that are more effective and adaptive to the needs of the curriculum and environmental context.

## 2. Methodology

E-module in this study was developed with Research and Development (R&D) approach that purposed to produce new products or improve existing products. The development process of this interactive e-module is according to the ADDIE model (Analysis, Design, Development, Implementation, and Evaluation). It is worth noting that this research only includes the development stage since the goal was to develop a product as the final result, hence the implementation stage was not conducted. This is possible because the ADDIE model can be adapted according to research needs (Sugiono, 2014).

### *Analysis*

The analysis stage was carried out to explore the background and needs of developing multimodal text learning resources based on interactive e-modules for Explanation Text material in grade XI senior high school. This analysis includes several main aspects:

a) Analysis of student needs: This involved analyzing through previous research and discussions in order to identify students' needs in studying Explanation Text, learning preferences, and the challenges they encounter in understanding and mastering the material effectively.

b) Curriculum analysis: The aim was to ensure that the development of this module was in line with the applicable curriculum in senior high school grade XI which was Kurikulum 2013, learning materials, standard of competency, and suggested learning approaches.

c) Learning media analysis: This included the selection and utilization of appropriate media to support the learning of Explanation Text materials. The process was proceeded by evaluating different types of learning media that have been tested in prior research.

### *Design*

The second stage was the design stage. In the design stage, there were two main points:
a) Designing interactive e- module: At this stage, the researcher designed the e-module in accordance with the Explanatory Text Curriculum 2013 content, e-module framework, and quiz material. This design stage also included determining relevant images, audio, video animations, and quizzes to enrich the e-module material.
b) Designing research instruments: Researchers compiled a validation sheet with evaluation criteria such as content aspects, content feasibility, presentation feasibility, language feasibility, and graphic feasibility.

### *Develop*

The third stage is the development stage. In developing the interactive e-module, researchers used Canva to develop the display design and layout of the module and Flip Builder to convert PDF files into e-modules. The development stage is divided into two stages, namely stage 1 and stage 2. At development stage 1, the e-module was designed according to the initial design. Then, the e-module was assessed by experts to be validated. Media expert validation sheet indicators modified from Fonda and Sumargiyani (2018). The data analysis technique that will be utilized in this research is descriptive analysis (Sugiyono, 2014). The descriptive assessment on the validation sheet is converted into quantitative data using a Likert scale (Boone & Boone, 2012). For assessment purposes, the validators provide a range of scores using a Likert scale consisting of 4 categories or choices. The Likert Scale categories used in data analysis techniques can be shown as in Table 1.

Table 1. Likert Scale Category (Boone & Boone, 2012)

| No | Score | Category |
|---|---|---|
| 1. | 4 | Excellent |
| 2. | 3 | Good |
| 3. | 2 | Average |
| 4. | 1 | Poor |

The data were analyzed with specific analysis techniques using formulations by Linda et al. (2018).

$$\mathbf{P = (n/N)\times 100\%}$$

Explanation:
P = Percentage score (%)
n = Number of scores obtained
N = Maximum score

The percentages obtained are then converted into qualitative values with the validity criteria in Table 2.

Table 2. Validity Criteria

| Percentage Score (%) | Validity Criteria |
|---|---|
| 75.00-100 | Valid |
| 50.00-74.99 | Valid Enough |
| 25.00-49.99 | Less Valid |
| 0.00-24.99 | Not Valid |

(Adaptation from Linda et al. (2018)

The interactive e-module was considered valid if the minimum percentage of validity achieved was between 50% and 100% (valid enough to valid criteria). If the level of validity achievement was under 50%, then revisions needed to be made until a valid interactive e-module was obtained. If the e-module has not reached the valid level, then stage 2 development will be carried out which aims to improve.

### *Implementation*

This research only focused on the development stage since the flexibility of the ADDIE model enables modifications according to research needs (Sugiono, 2014). Implementation was not conducted as this research aimed to produce a product as the end result, without proceeding to the implementation stage.

### *Evaluation*

The evaluation stage was an ongoing process applied to each development cycle of the multimodal text interactive e-module for Explanation Text Material in senior high school. Evaluation was carried out by collecting feedback from the validators.

## 3. Results and Discussion

### *Results*

### *Developing E-Module*

In this study, an interactive e-module was developed using the Flip Builder application for grade XI senior high school for Explanation Text material. This product can be accessed online through electronic devices such as computers, laptops, and smartphones. The research approach as Research and Development by applying the ADDIE development model. The ADDIE development process in this study included analysis, design, and development stages. The following is an explanation of the results of each stage of development:

### A. Analysis

The first stage of developing the interactive e-module was the needs of students' analysis, the curriculum analysis, and the learning media analysis.

- Students' needs analysis:

The first stage of this interactive e-module development is student needs analysis, curriculum analysis, and learning media analysis. Based on the needs analysis through previous research literature study, it was found that learning is effective when students are active in problem solving with little teacher assistance and have high motivation Bremner (2021). Most students (72%) were familiar with internet-based learning Destianingsih (2017), which showed internet integration can increase learning motivation. Thus, the development of digital learning materials aims to support students' learning achievement with effective strategies. Teachers need to design modules that enable students to develop digital literacy, collaboration in problem solving, creativity, and other skills with innovative technologies. These findings support the need for practical, engaging and interactive learning media that students can access independently.

- Curriculum Analysis

Furthermore, at the curriculum analysis stage, an evaluation of the Explanatory Text material taught to grade XI high school students was carried out. This process includes an in-depth analysis of the Core Competencies and Basic Competencies contained in the Explanatory Text material. This analysis aims to ensure that the learning materials are in accordance with the established competency standards, which include students' ability to use English interpersonally, transactionally, and functionally in both speaking and writing contexts.

- Media Analysis

The development of learning media, there are four competency scopes of English language subjects in grade XI SMA which are in line with Canale & Swain (1980).

(1) Language Action Competency is manifested in the mastery of four language skills; listening, speaking, reading, and writing. The researcher has presented these four skills explicitly in this interactive module.

(2) Linguistic Competence is manifested by the ability to correctly apply and understand the elements of grammar, vocabulary, pronunciation, and spelling in the text. (3) Sociolinguistic Competence is manifested by the ability to use language appropriate to the social context. This competence is divided into two competencies as follows.

(a) Sociocultural Competence is the knowledge of the relationship between language use and its non-linguistic context. Researchers raised the theme of Climate Change as the main topic in supporting Language Action Competence.

(b) Discourse Competence is knowledge about the rules that regulate the cohesion and coherence of a number of discourses and form a meaningful series of utterances.

(3) Strategic Competence is the ability and skill to apply various strategies so that communication remains effective. This competence is also known as the ability to paraphrase what the speaker says and to ask probing questions. To improve this

competency, the researcher included some videos of real speakers in this interactive module. Furthermore, learners can identify strategies in presenting Explanatory Text and also the material presented in the videos.

## B. The Designing Stage

The second stage in the development of interactive e-modules was the design stage, where the module was designed according to the needs by containing multimodal texts, such as written texts, audios, videos, and quizzes. The results of this design included a specific module concept, title, and outline. The concept of this module focused on the topic of climate change, including definitions, impacts, resulting disasters, and coping strategies. The title of this e-module is "Interactive E-Module Tell Me How and Why! Explanation Text Material for Grade XI High School", which is reflecting the interest in understanding the process of events, the core of explanation text material for high school. The e-module framework was adapted from the practical guidelines of the Directorate of High School Development of the Ministry of Education and Culture Indonesia in 2017, including the cover, table of contents, author profile, instructions for use, core and basic competencies, concept map, learning materials, evaluation, and attachments. This framework design was realized into an e-module using Canva software for display design and integrated with Youtube application. All components were compiled as an interactive e-module using Flipbook software.

## C. The Developing Stage

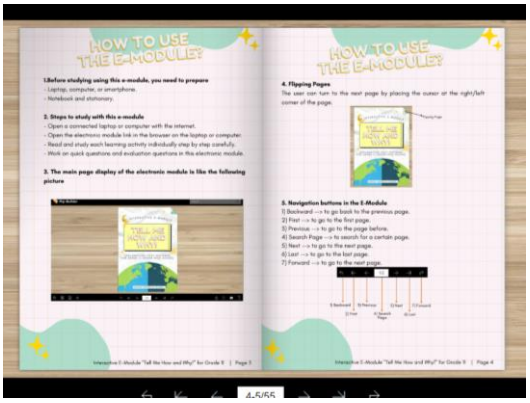
The development process was carried out in accordance with the design. Following that, the e-module went through a validation process involving three experts who had expertise in content, presentation, language, and graphic display. The results of this evaluation determined whether this module has met the expected standards before being implemented in the learning process. Table 3 shows the display of "Interactive E-Module Tell Me How and Why! Explanation Text Material for Grade XI High School"

Table 3. The Screenshot of the E-Module Result

| No. | E-Module Components | Display |
|---|---|---|
| 1. | Cover | |

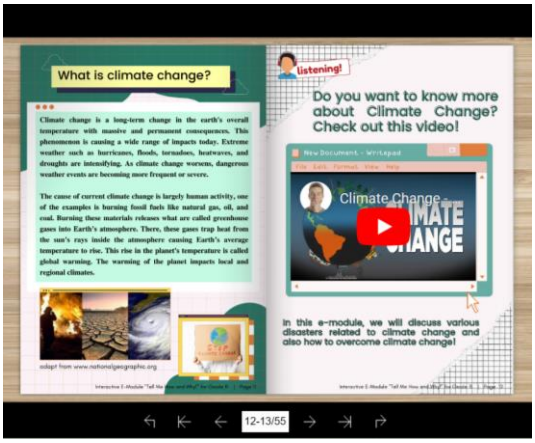
2. Table of contents and author profile

3. Direction for using e-module

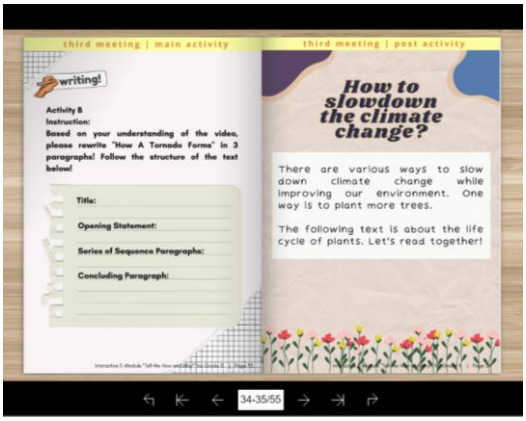



4. Kompetensi inti, kompetensi dasar, and mind map

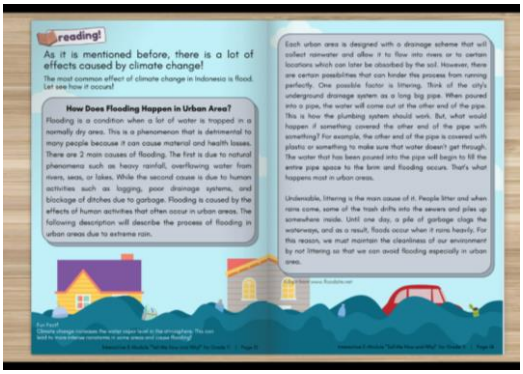
5. Learning material (Listening Section)



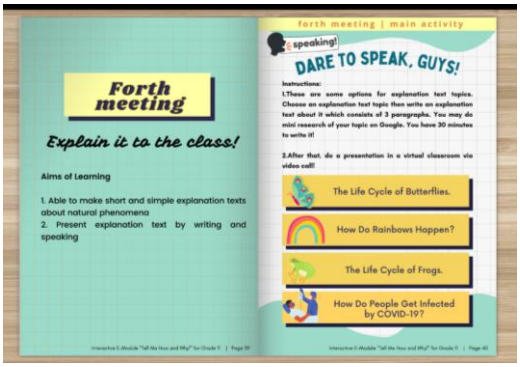

6. Learning material (Writing Section)



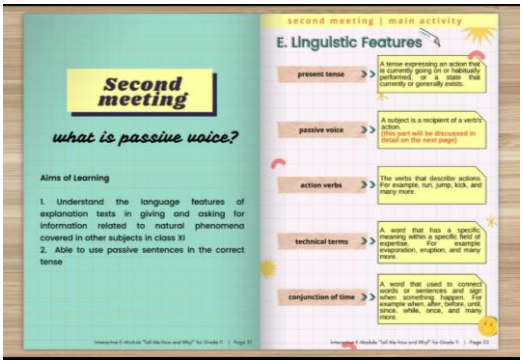

7. Learning material (Reading Section)

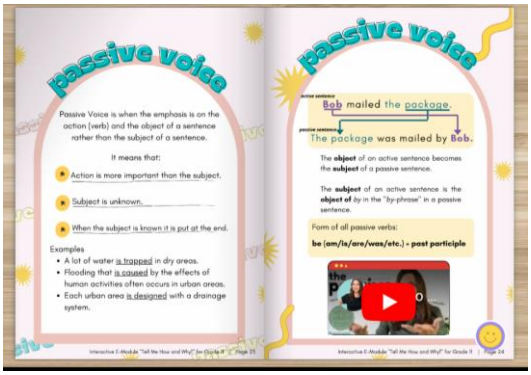


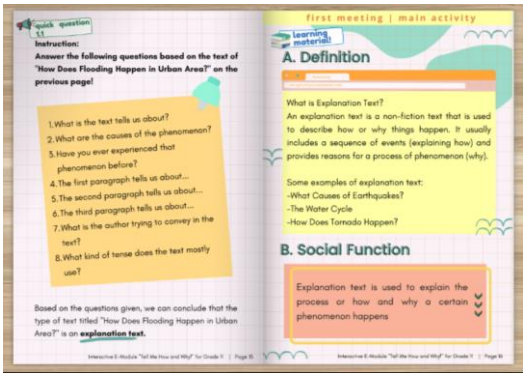

8. Learning material (Speaking Section)



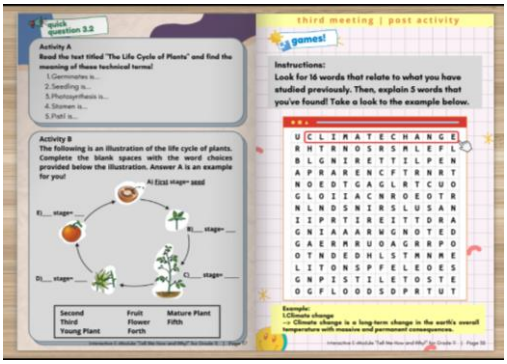
9. Grammar



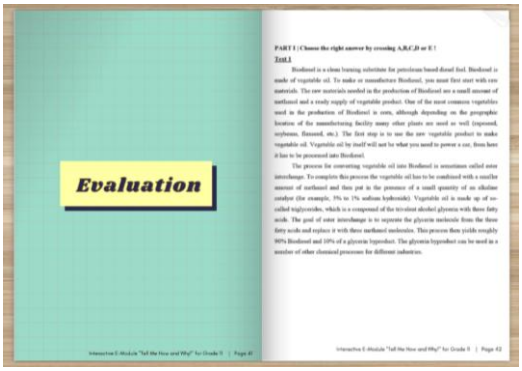



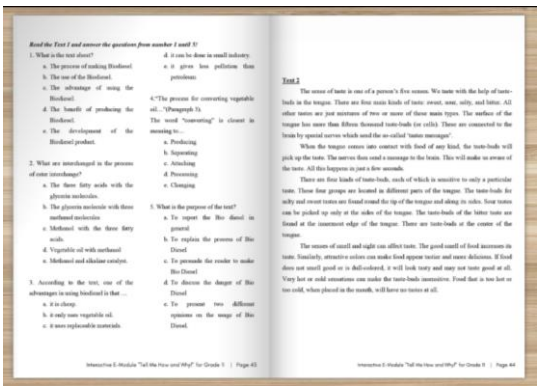




10 Game

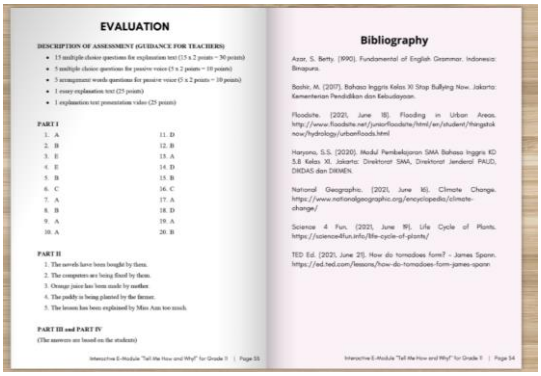


11. Evaluation Test



12 Attachments




## *Validation Phase*

Figure 1 shows the validation result of the module. Based on Figure 1, overall, the validation results show that the interactive e-module "Tell me How and Why!" qualifies as an effective learning media. In the Content Feasibility assessment, the percentages are 78.57%, 100%, and 96.42%. For Presentation Feasibility, the percentages are 87.5%, 87.5%, and 93.75%. Evaluation of Language Feasibility shows percentages of 75%, 100%, and 91.67%, while for Graphics Feasibility, the percentages are 78.57%, 98.21%, and 94.64%. Based on the Validity Criteria table adapted from Linda et.al (2018), it can be concluded that the Interactive E-Module "Tell me How and Why" is considered a valid module.

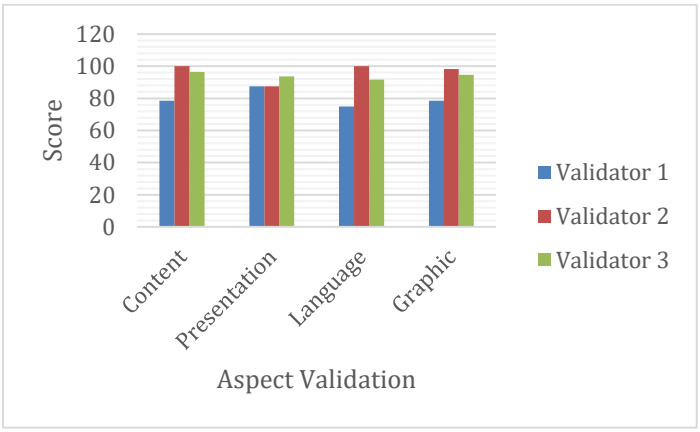



Figure 1. Validation Result from the Validators

***Discussion***

The process of developing an interactive E-Module in this study utilized the Research and Development approach with the ADDIE model. E-module "Interactive E-Module Tell Me How and Why! Explanation Text Material for Grade XI High School" was developed using the Flip Builder application. Using this application, the media display becomes varied since it can incorporate text, image files, pdf, swf, animation, audio, and video with FLV and MP4 formats (Sugianto, et al, 2017).

Learning media combined with the internet is indispensable in today's world of education. In 2017, Destianingsih and Satria found that 72% of students knew about internet-based learning. This means that education supported by the internet as a learning medium is not new to them. The combination of the internet and learning can actually increase student motivation in learning. The purpose of digital or multimedia technology-based learning materials is to help students achieve the best learning achievement through effective learning strategies applied in learning materials. This is in accordance with Groff's (2013) opinion that teachers should be able to build a good learning module where students can gain digital literacy, collaborative problem solving, creativity, and many other skills while interacting with innovative and interesting technology. The results of this study are a strong basis for the need to develop a practical, interesting, and interactive learning media that can be used independently by students anywhere and anytime.

One of the main benefits of multimodal e-modules is their ability to meet students' learning needs and preferences. Besides being able to accommodate various learning styles, multimodal e-modules also provide other advantages. Multimodal e-modules can increase learning motivation by making the learning process more interesting and fun. The use of interactive elements, gamification features and multimedia content can capture students' attention and increase their intrinsic interest and motivation to learn. This not only contributes to improved understanding of the material but also deepens student engagement in learning, making this e-module an effective learning resource.

This research produced a valid module that can support internet-integrated learning. This research contributes to the emerging literature promoting technology integration in meeting learners' expectations in 21st-century education. Although this research contributes profoundly to English language education, it also recognizes potential limitations. This E-Module has not been tested directly with students as it only reached the validity test stage. Therefore, further research is required to test the effectiveness of this e-module directly to students.

## 4. Conclusion

Based on the results of this study, it can be inferred that the Interactive E-Module "Tell Me How and Why" meets the eligibility criteria as a learning module that employs multimodal texts. This interactive e-module is suitable to support students' understanding of Explanation Text material for grade XI high school. However, further research is recommended to pilot this module directly to students.

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