



Interactive E-Modules for Arts Education: Improving Comprehension and Engagement in Nusantara Music Courses

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ABSTRAK

Penggunaan modul ajar dalam proses pembelajaran masih menghadapi kendala, terutama media berbentuk cetak yang cenderung monoton dan kurang menarik bagi mahasiswa di era digital. Kendala ini memengaruhi pemahaman dan keterlibatan mahasiswa dalam pembelajaran, khususnya pada mata kuliah yang memerlukan apresiasi seni, seperti Musik Nusantara. Penelitian ini bertujuan untuk menganalisis efektivitas pengembangan e-modul interaktif dalam meningkatkan pemahaman dan keterlibatan mahasiswa pada mata kuliah tersebut. Penelitian ini menggunakan metode *research and development (R&D)* dengan model pengembangan ADDIE yang terdiri dari lima tahap: Analisis, Desain, Pengembangan, Implementasi, dan Evaluasi. Data dikumpulkan melalui pretest dan posttest untuk mengukur hasil belajar kognitif dan psikomotor. Analisis data dilakukan dengan membandingkan hasil pretest dan posttest menggunakan uji statistik deskriptif. Hasil penelitian menunjukkan bahwa e-modul interaktif yang dikembangkan efektif meningkatkan pemahaman mahasiswa, terlihat dari peningkatan signifikan skor posttest dibandingkan pretest. Selain itu, penggunaan e-modul juga meningkatkan keterlibatan mahasiswa selama proses pembelajaran. Simpulan dari penelitian ini adalah bahwa e-modul interaktif berbasis ADDIE dapat digunakan secara efektif sebagai media pembelajaran untuk meningkatkan hasil belajar mahasiswa pada mata kuliah Musik Nusantara.

ABSTRAK

The use of teaching modules in learning processes still faces challenges, especially printed materials that tend to be monotonous and less appealing to students in the digital era. These challenges affect students' understanding and engagement in learning, particularly in courses that require artistic appreciation, such as *Nusantara Music*. This study aims to analyze the effectiveness of developing interactive e-modules to enhance students' comprehension and engagement in this course. The research employed a *research and development (R&D)* method using the ADDIE development model, which comprises five stages: Analysis, Design, Development, Implementation, and Evaluation. Data were collected through pretests and post-tests to measure cognitive and psychomotor learning outcomes. Data analysis was conducted by comparing pretest and post-test results using descriptive statistical tests. The findings revealed that the developed interactive e-module effectively improved students' comprehension, as indicated by significant improvements in post-test scores compared to pretest scores. Additionally, the use of e-modules increased student engagement during the learning process. The study concludes that the ADDIE-based interactive e-module can be effectively utilized as a learning medium to enhance students' learning outcomes in the *Nusantara Music* course.

1. INTRODUCTION

21st-century learning in the context of the Industrial Revolution 4.0 demands continuous innovation and the optimal utilization of technology. Technology is no longer a foreign concept in this era, as society has increasingly shifted activities from the physical world to the digital realm. In addition to their roles in teaching and education, lecturers are also responsible for conducting research aligned with the

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strategic plans of their respective institutions (Kartikasari & Ratu, 2020; Pramana et al., 2020; Sa'diah et al., 2022). The enhancement of learning quality in higher education must be in harmony with the rapid development of information and communication technology within society. Various strategies can be implemented to improve learning outcomes, one of which is the development of instructional materials. The development of instructional materials by lecturers serves as a solution to address learning challenges, taking into account the target learners and the competencies that need to be achieved (Gustiawati et al., 2020; Maksum et al., 2020; Nurafni et al., 2020; Rifqiawati et al., 2020). In the digital era, the integration of technology into the learning process has become essential. One notable innovation that can be applied in the field of education is the use of interactive e-modules (Banyu Biru et al., 2020a; Darmayasa et al., 2018; Palgunadi et al., 2021). An e-module is an instructional material designed with engaging learning steps and integrated with internet connectivity, guiding students to construct their own knowledge. This approach fosters self-directed learning, allowing students to learn independently at their own pace (Banyu Biru et al., 2020b; Seruni et al., 2019; Tambunan, Lois Oinike; Tambunan, 2023).

However, a current issue in higher education is that conventional learning methods and instructional materials often fail to effectively engage and capture students' interest. This phenomenon can undoubtedly lead to a decline in the quality of student learning outcomes. At present, the *Nusantara Music* course module is provided in printed form. Such modules tend to be monotonous and less appealing to students, limiting their engagement and learning motivation. Universitas Negeri Padang (UNP) has implemented digital learning platforms, namely eLearning and eLearning2UNP, which have supported students in pursuing self-directed learning. Nevertheless, there are still several aspects where these platforms fall short in optimizing and fostering a more interactive learning process. One critical component influencing the quality of learning is the teaching method employed. The ability of lecturers to select and apply appropriate instructional methods in the classroom is essential for enhancing learning effectiveness and student outcomes (Ardiana, D. P. Y.; Widyastuti, A.; Susanti, S. S.; Halim, N. M.; Herlina, E. S.; Nugroho, D. Y.; Fitria, D.; Veryawan, & Yuniwati, 2021). In response to these challenges, a creative approach is recommended. This approach encourages the development of original and innovative ideas, stimulating both creativity and critical thinking among students (Rahmawati & Nugrahani, 2019). This aligns with research findings indicating that contemporary learning processes are closely connected to technological advancements, significantly influencing students' digital literacy skills digital (Fauziyah & Kurniawan, 2020; Ririen & Daryanes, 2022).

One of the instructional materials that can be developed to support effective learning is the module. Learning modules play a crucial role in facilitating more efficient and structured learning processes (Oksa & Soenarto, 2020; Sidiq & Najuah, 2020). As a systematic instructional tool, modules assist lecturers in delivering content in an organized and goal-oriented manner, enabling students to clearly understand learning objectives and the steps required to achieve them (Sidiq & Najuah, 2020; Winatha et al., 2020). To increase student engagement, one effective strategy is to design modules in electronic form, transforming them into interactive products. Interactive e-modules can integrate multimedia elements such as images, animations, audio, and videos, making the learning experience more dynamic and appealing. Given the rapid advancements in technology and students' familiarity with Android devices, there is a growing need to develop interactive electronic modules (e-modules) tailored for modern learning environments (Muzijah et al., 2020; Sidiq & Najuah, 2020; Winatha et al., 2020). E-modules are digital learning tools that offer several advantages over traditional learning methods. They provide easy access to a wide range of learning resources and accelerate the process of understanding complex material. These benefits make e-modules an effective solution for promoting efficient and sustainable learning in the current digital era (Dwi Lestari & Putu Parmiti, 2020; M A Ramadhan et al., 2020). Previous studies have shown that e-modules can serve as effective alternatives to traditional textbooks or printed materials without diminishing their primary function as sources of information (Nisa et al., 2020; Romayanti et al., 2020). Furthermore, e-modules can be utilized both inside and outside the classroom, offering flexibility that supports diverse learning contexts.

The development of interactive e-modules has proven to be highly essential for supporting independent learning or learning beyond regular classroom hours (Elvarita et al., 2020; Harlis et al., 2024). The creation of interactive e-modules enables a more flexible learning process, allowing students to engage with learning materials without being constrained by time and space. E-modules provide access to educational content anytime and anywhere, tailored to meet individual learning needs (Lestari & Parmiti, 2020; Ririen & Heriasman, 2021). Moreover, the interactive features embedded within e-modules make the learning experience more engaging and enjoyable, significantly enhancing students' learning motivation. Lecturers also benefit from greater flexibility in delivering course content, as e-modules support a variety of creative and innovative teaching methods. Consequently, interactive e-modules serve as effective tools for fostering adaptive learning environments, particularly in courses such as *Nusantara Music*. Empirical studies have demonstrated that interactive e-modules can improve both students' motivation and learning outcomes (Herawati & Muhtadi, 2018; Lestari & Parmiti, 2020; Ririen & Heriasman, 2021). This highlights

their potential as a transformative medium in higher education, contributing to more dynamic, student-centered learning experiences.

This e-module is designed based on a comprehensive needs analysis, followed by the development of a responsive and user-friendly interface, featuring engaging and interactive content that fosters effective communication. One of the software tools that can be utilized for creating such interactive learning materials is FlipHTML5. FlipHTML5 is an advanced application for designing digital modules, offering a range of features that enhance both the functionality and aesthetic appeal of educational content. The combination of these features makes FlipHTML5 an efficient and effective solution for developing dynamic, responsive digital modules. The application has been proven valid and practical for use by students (Sugianto et al., 2017; Wati et al., 2022). Currently, there is a lack of studies focusing on interactive e-modules in art education, particularly concerning their role in enhancing understanding and engagement in *Nusantara* Music courses. Addressing this gap, the present study aims to provide solutions to the challenges encountered in teaching *Nusantara* Music. The intended learning outcome of the course is to enable students to analyze *Nusantara* musical works from both cultural and musical perspectives. To achieve this outcome, the course requires the integration of multimedia-based instructional materials, thereby necessitating the development of interactive digital modules. E-modules offer several advantages over conventional printed modules. Unlike traditional materials, e-modules can present content in more engaging formats, including text, images, animations, audio, visual, and audiovisual elements. This study employs FlipHTML5 as the platform for developing the digital module, aiming to enhance both the learning experience and academic performance in the *Nusantara* Music course.

2. METHOD

This study is development research, commonly referred to as Research and Development (R&D), as it aims to produce an effective learning product or solution through a systematic process. The research design is visualized in a linear sequence, allowing for revisions at each stage to ensure optimal outcomes. The primary goal is to develop an interactive e-module that incorporates *Nusantara* Music course materials for students of the Department of Performing Arts Education (Sendratasik), Faculty of Language and Arts (FBS), Universitas Negeri Padang (UNP). The approach employed in this study is based on the ADDIE model, which stands for Analysis, Design, Development, Implementation, and Evaluation. The ADDIE model is widely recognized for its effectiveness in instructional design and learning module development. It provides a structured and systematic sequence of activities aimed at addressing learning challenges related to instructional resources that align with students' needs and learning characteristics (Cahyadi, 2019). The ADDIE model offers a comprehensive framework for the development of interactive e-modules tailored to the *Nusantara* Music curriculum. By systematically applying the five stages (analysis, design, development, implementation, and evaluation) the researchers are confident that the resulting interactive e-module will be relevant, engaging, and effective in achieving the intended learning outcomes. Additionally, the continuous evaluation embedded in the ADDIE process ensures that the e-module can be refined and improved over time, based on feedback and learning outcomes.

Data were collected using observation, interviews, and questionnaires distributed to students and validators at the research site. The study population consisted of students from the Department of Performing Arts Education (*Sendratasik*) who were enrolled in the *Nusantara* Music course. The number of respondents surveyed was 20 students, while validation data were obtained from one instructional design expert and one instructional media expert within the *Sendratasik* Department. The observation method involved systematic direct observation to collect real-time data. The purpose of this method was to gather authentic, firsthand information. The interview method involved systematically structured questions and answers, with responses meticulously recorded. Meanwhile, the questionnaire method collected data by providing a list of written questions for respondents to answer (Agung, 2017). The instruments used for data collection included observation sheets, interview sheets, and questionnaires. Observation sheets were utilized to assess student responses to the design of the interactive e-module. The research team used interview sheets to gather feedback from both students and subject-matter experts regarding the e-module, while questionnaires were employed to obtain evaluative comments related to the feasibility of the e-module product.

The data analysis technique involved organizing the data, classifying it, and processing it using a Likert scale. The data analysis consisted of several stages: (1) Analysis of the *Nusantara* Music course, (2) Module design stage, (3) Development stage, and (4) Implementation stage. The evaluation framework included key elements such as validity indicators (what is being assessed), types of validation (content expert, media expert, or user), validation statements/questions, data sources, and rating scales. This framework ensured that the instruments developed were not only theoretically relevant but also practically effective, based on input from various stakeholders, including experts, practitioners, and end-users.

3. RESULT AND DISCUSSION

Results

The teaching of the Indonesian Music course initially used a conventional teaching method, which involved lectures and discussions supported by presentation media such as Microsoft PowerPoint (PPT). However, based on observations, the use of these methods and media was found to be insufficient in helping students understand the material related to the Indonesian Music course. This course requires interactive and communicative media because its content demands that students watch videos, listen to audio, and view images related to music in Indonesia. The development of interactive e-modules for the Indonesian Music course is a series of processes aimed at producing an effective and efficient learning resource. The interactive e-module developed is based on the ADDIE development model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation.

The first stage is Analysis. In this stage, the focus is on analyzing the Indonesian Music course itself. This analysis aims to determine the necessary steps in developing an interactive e-module for students taking this course. It also includes analyzing the challenges students face during the course. Based on this, the first step in creating the interactive e-module is conducting a needs analysis for the students. This analysis involves gathering information on students' understanding, learning styles, and technology accessibility. (1) Students' Understanding: This analysis aims to assess the extent of students' comprehension of the material to adjust the module's difficulty level. (2) Learning Styles: The analysis here focuses on designing the interactive e-module to accommodate various learning styles of students. (3) Technology Accessibility: This involves examining and ensuring the availability of devices and internet connectivity to ensure that the module is accessible to students without any issues. Furthermore, the analysis needs to be based on the learning outcomes of the course. This is crucial to ensure that the e-module is designed to align with the predetermined learning objectives. Additionally, the e-module must be structured in a way that presents interconnected material that is easy for students to understand.

Based on observations conducted at the Department of Performing Arts, Faculty of Arts, UNP, there are several challenges in the teaching process of the Indonesian Music course, one of which is the lack of communicative teaching materials. By this, it is meant that the materials consist only of regular reading materials in the form of written texts, making it less interactive for digital learning. This course is a theoretical one that requires students to have diverse learning materials and references, including readings, audio, visuals, and audiovisual content. In the Indonesian Music course, students will learn about the history, types of instruments, music genres, musical aspects, and the cultural influences on the development of Indonesian music. Clearly, it is difficult to cover these topics in detail within the 16 class meetings. Therefore, students are expected to study independently outside of class hours. Currently, students use printed books as their learning resources in this course. While printed books are useful as a learning medium, they present some challenges in their usage, as they are perceived as impractical and not engaging enough to capture students' attention. Students find the use of printed books less engaging and boring.

The analysis of the students in the Indonesian Music course, based on observational results, shows that the teaching process still predominantly relies on lecture and discussion methods. Furthermore, students attending these sessions appear to be less active because they struggle to understand the material presented in the printed books. This leads to difficulties when the instructor presents problems related to the topics being taught. Therefore, students in this learning process require teaching materials that are both interesting and interactive, enabling independent learning with content aligned with the competencies they need to master. This includes clear explanations, the use of relevant images and videos, which would further enhance students' interest in studying the material.

Based on field observations, it can be concluded that students' ability to receive and respond to the material in the Indonesian Music course varies, which in turn affects their interest and engagement in the learning process. This results in the course not being effective, as students tend to disengage and focus on other activities instead of paying attention to the lecture. Following the previous activities, the researcher conducted an analysis of the material and the need for the development of the e-module by conducting a literature review of related materials. After completing these stages, the next step was to carry out a focus group discussion (FGD), the results of which were expected to help determine the appropriateness and effectiveness of the material to be included in the e-module, as well as refine the language used in the e-module content.

The second stage is Design. The design phase involves the creation of the module design. This phase is carried out by compiling and selecting the material to be organized and then formatted into a module using Fliphtml5 technology, supported by Adobe Illustrator, and aligning it with the most suitable teaching strategy. During this phase, the design of the interactive e-module is also conducted, based on the course topics that align with the learning indicators. This includes paying attention to grammar, image formats, and video formats. Additionally, the design process involves the creation of assessments, selection of appropriate media to achieve the learning objectives, and initial planning and formatting. In this stage of

the design of the interactive e-module, the focus is on the course topics that will be included in the material to ensure they align with the learning indicators and objectives that have been set. The e-module design is produced by the researcher as an initial form of the interactive e-module development. The cover design of the interactive e-module is shown in [Figure 1](#).



Figure 1. Implementation of E-Module Cover Design

In [Figure 1](#), it can be observed that the design of the front page (cover) of the e-module includes the course title, which can later be viewed using an application. This design aims to make the developed e-module visually appealing and easier for students to engage with. Furthermore, during the design phase, the researcher focused on planning the structure used in the interactive e-module and organizing the content that would be displayed. Several key elements were considered during the design process, including the module structure, where the researcher designed the flow of the learning content, such as the sequence of topics and sub-topics that would be presented. Interactive design, in this phase, the researcher selected and designed interactive elements, such as quizzes, simulations, and games, which would enhance student engagement. Visuals and audio, this stage involves ensuring that the visual and audio aspects of the interactive e-module are aligned to support the content understanding.

The third phase is the development stage, which involves the creation and realization of the design that was previously made. The researcher develops creative features within the e-module. In this phase, the research team conducted trials with students in the classroom to observe their responses to the e-module. The format of the developed e-module is aligned with the needs identified in the design phase. Validation from content and media experts is also conducted during this phase to assess the completed e-module. Once the content has been developed into learning materials, the next step is to create an e-module that can be accessed by students. Furthermore, the development stage, which includes validation from experts and e-module testing, aims to obtain instruments that are valid and suitable for assessing the e-module product. The components evaluated in the research instrument include aspects such as statements that align with the instrument grid, content/material relevance, and alignment with the learning process. In simple terms, during the development stage, the researcher takes the design created in the previous design phase and develops it into the final e-module product. The stages in the development phase include content creation, where the previously designed content is transformed into digital formats such as text, video, audio, and other interactive elements. Coding and integration, where the pre-existing elements are integrated using the development platform. The result of this development is shown in [Figure 2](#).

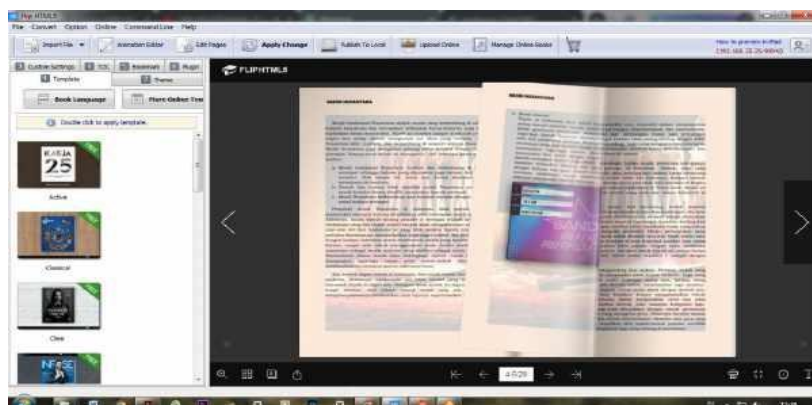


Figure 2. E-Module Material Design

The development process of this interactive e-module was conducted using a series of development steps aimed at determining the effectiveness of the e-module in the learning process. The development of this e-module is based on observations, interviews, and student needs analysis as a foundation for its creation. Several programs and software, such as Adobe Illustrator and Fliphtml5, were used to produce the digital book containing the e-module content for the *Nusantara* Music course. Once the e-module was developed, an assessment by media experts was conducted. Compared to conventional print modules, e-modules offer greater interactivity and ease of navigation. Additionally, this interactive e-module is capable of displaying images, audio, and video. Based on the assessment, it was found that the overall quality of the e-module was quite good. Therefore, it can be concluded that the interactive e-module as a learning medium for the *Nusantara* Music course facilitates learning and helps achieve the learning objectives.

In this phase, several activities are carried out, including validation testing by content and media experts for the developed e-module. During the implementation phase, the researcher will apply the e-module product in the classroom setting and evaluate the trial results. In this phase, students use the interactive e-module in their course activities. The objective of this trial is to determine how much the e-module influences student interest and engagement in class, thus assessing the feasibility of the interactive e-module. At this stage, students have fully utilized the application during the learning process. One of the features includes a video menu displaying videos related to the *Nusantara* Music course material. It can also be explained that during the implementation phase, the testing of the developed e-module in the context of the *Nusantara* Music course is involved. The stages carried out during implementation include: trial runs, where the researcher conducts tests with a small group of students to gather initial feedback; user training, providing students with guidance on how to use the e-module; and distribution, which involves distributing the e-module to students for use.

In the final phase, after improvements based on expert suggestions and student feedback, the evaluation stage is conducted. This is a formative evaluation aimed at assessing the effectiveness of the e-module in the *Nusantara* Music course. After conducting the evaluation of the e-module based on media expert feedback and field testing, it was evident that the use of the e-module improved students' attention during lectures. Evaluation stages during the development process (formative evaluation) and after the implementation phase (summative evaluation) were conducted. Formative evaluation is carried out during the development phase to ensure the quality and alignment of the e-module with the learning objectives. Summative evaluation is performed after the implementation phase to assess the effectiveness of the interactive e-module in improving student learning outcomes and achieving the set objectives.

Discussion

The development of interactive e-modules for the course on *Nusantara* Music is a crucial step to undertake. This is because, in the current technological era, the integration of technology into education is imperative, as the learning process is increasingly relying on technological tools. By utilizing and implementing technology-based learning, students can more easily engage with the course content, as it can be accessed anytime and anywhere (Aspriyani & Suzana, 2020; Gufran & Mataya, 2020). Furthermore, students are more likely to become active and motivated in participating in the *Nusantara* Music course. The application of technology-based learning can foster motivation and increase student participation (Aspriyani & Suzana, 2020; Gufran & Mataya, 2020; Maharani & Desyandri, 2024; Nisa et al., 2020). This aligns with the students' need for varied learning experiences that go beyond relying solely on printed textbooks as the primary source and medium of learning.

The e-module used is interactive, as it involves active engagement between students and the learning materials. The e-module contains content that includes text, audio, and video learning materials. The use of this interactive e-module can further motivate students in the learning process (Elvarita et al., 2020; Lestari & Parmiti, 2020). A visually appealing design can enhance students' desire to study *Nusantara* Music. The interactive e-module is systematically and attractively designed to achieve the course competencies/sub-competencies as expected, according to their complexity (Imansari & Sunaryantiningsih, 2017; Kurniawati, 2020). Moreover, research findings suggest that the use of interactive e-modules represents an innovation in teaching materials, designed to meet the needs of modern education by integrating digital technology. As a learning resource, the interactive e-module incorporates several essential elements, including content, methods, limitations, and evaluation approaches (Aspriyani & Suzana, 2020; Dwi Lestari & Putu Parmiti, 2020; Gufran & Mataya, 2020). These elements are systematically and engagingly crafted to ensure that the learning process is effective, efficient, and enjoyable.

E-modules can serve as a tool for educators to share the learning materials that students need to study (Aspriyani & Suzana, 2020; Gufran & Mataya, 2020; Maharani & Desyandri, 2024; Nisa et al., 2020). In the e-module, the transition of learning content occurs through various components, such as text, images, audio, video, and interactive exercises, all of which aim to increase students' interest and motivation in understanding the material (Dwi Lestari & Putu Parmiti, 2020; Wulandari et al., 2021). Based on evaluations

from media experts and students using the interactive e-module in the *Nusantara* Music course, the e-module received positive assessments. The positive ratings were based on several indicators, including the clarity of the learning objectives outlined in the e-module, the depth of the content presented through text, images, and video, and the use of clear language that effectively conveys the intended information. According to student feedback, the interactive features, such as the displayed images and sounds, were easy to view and hear, and the e-module could be accessed anywhere.

Overall, the e-module meets the criteria as it offers students the opportunity to acquire knowledge through presentations, videos, animations, and feedback provided by the e-module. Expert evaluations suggest that the conceptualization and implementation of the e-module developed for the Digital Simulation course, utilizing a project-based learning model, can be applied and integrated into the implementation and evaluation stages. The e-module was created to address the challenges faced by students in using traditional course materials. With the availability of this e-module, students can access content or materials without time constraints and can access it anywhere, using computers or even smartphones. This aligns with research findings that suggest electronic learning resources can improve learning outcomes and boost students' enthusiasm (Dewi & Lestari, 2020; Istikomah et al., 2020; Sari et al., 2020). Additional findings also reveal that e-modules facilitate student learning, thereby enhancing academic performance (Putri et al., 2020; Wijayanti et al., 2020). Android-based interactive e-modules are considered an ideal product today as they support multi-product usage (integration of audio-visual content such as videos), high interactivity, and multi-source learning (through internet connectivity), thus addressing the limitations of traditional textbooks (M. Agphin Ramadhan et al., 2020; Sidiq & Najuah, 2020). The implications of this research are that the development of interactive e-modules, featuring engaging designs and user-friendly, communicative language, provides students with greater ease in their learning activities. This leads to increased motivation and understanding in the course. The use of interactive e-modules has had a positive impact on the *Nusantara* Music course, contributing significantly to student learning.

4. CONCLUSION

The development of the interactive e-module for the *Nusantara* Music course has met the criteria for an effective and suitable learning medium for students. Furthermore, the use of this interactive e-module can enhance student performance in an effective and efficient manner during the course. This can be observed from the analysis of the e-module usage before and after its implementation in the *Nusantara* Music course. The interactive e-module holds significant potential for improving the quality of learning among students. The success of implementing this interactive e-module heavily depends on the quality of its design and the accessibility of technology for students in utilizing it. Therefore, further efforts are needed to ensure that all students can fully benefit from the interactive e-module.

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