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Development of Interactive PowerPoint Based Music Materials on Staff Notation for Junior High School Student

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Abstract: This study, conducted at SMP Negeri 14 Gresik, was motivated by students' low understanding of and motivation toward staff notation due to the continued use of conventional teaching methods. Initial survey results showed that 67% of students had not yet fully understood staff notation. Therefore, engaging and interactive learning media are needed. This study aims to describe the development process, quality, and effectiveness of interactive PowerPoint (PPT)-based learning media for staff notation. The method used was Research and Development (R&D) based on the ADDIE model, which includes the stages of Analysis, Design, Development, Implementation, and Evaluation. The research subjects consisted of eighth-grade students and Cultural Arts teachers. Validation was conducted by subject matter experts and media experts to assess the suitability of the media. The results showed that the media was developed systematically in accordance with the ADDIE stages. The quality of the media received scores of 90.6% from subject matter experts and 87.5% from media experts, both categorized as highly suitable. The effectiveness of the media was demonstrated by student responses of 92.8%, categorized as highly effective. Thus, the interactive PPT-based learning media on staff notation is considered suitable and effective for use in junior high school music education.

Keywords: instructional media development, interactive PowerPoint, staff notation, ADDIE model, learning effectiveness.

1. INTRODUCTION

One of the key factors influencing the success of the learning process is the type of media selected (Sanjaya, 2013). Instructional media play a significant role, as they assist educators in delivering content effectively to achieve learning objectives (Arsyad, 2019). The use of engaging and interactive media can help students remain focused, enthusiastic, and actively involved in learning activities, thereby improving their understanding and learning outcomes. In addition, varied presentation methods in delivering instructional content enable students to grasp the material more effectively. However, the use of unengaging and monotonous media may reduce students' motivation and hinder the achievement of learning objectives (Sadiman, 2009). This condition can also cause students to become passive, less enthusiastic, and unfocused during lessons (Sanjaya, 2014). In arts and culture education, particularly in music, mastering staff notation is one of the essential foundational competencies (Ministry of Education and Culture, 2017). This is because an understanding of staff notation forms the basis of musical activities (Jamalus, 1988). Staff notation serves as a symbolic language in music used to read, write, and systematically understand musical works. According to Jamalus (1988), staff notation is a fundamental component in learning and engaging in musical activities. This indicates that mastering staff notation is not only related to understanding music theory but also plays a crucial role in various



musical activities, such as singing, playing musical instruments, and appreciating musical works. Banoe (2003) also argues that notation is used as a means to understand and express musical works. Therefore, understanding staff notation is a fundamental skill that junior high school students need to master. However, initial observations at SMP Negeri 14 Gresik indicate that students' understanding of staff notation remains insufficient. This finding is supported by survey results showing that 67% of students have not yet fully understood the material. In addition, teaching methods that still largely rely on conventional approaches, coupled with the limited use of interactive media, tend to make students passive and unenthusiastic about participating in learning. This issue needs to be addressed by redesigning learning materials to encourage students to be more active in the classroom. One approach to addressing this issue is the use of interactive PowerPoint (PPT)-based learning media.

Interactive PPTs offer the advantage of integrating multimedia components such as text, images, audio, and animations, and are equipped with navigation features that foster interaction between students and the learning material. Interactive learning media have been proven to increase motivation, enhance student engagement, and improve learning outcomes (Wulandari, 2022). However, the use of interactive PPTs must be carefully designed to avoid a one-way learning approach. Therefore, the development of such media should adhere to the principles of interactive instructional design, such as the systematic presentation of material, the provision of exercises, and feedback for students. With appropriate design, interactive PPT-based media can serve as an effective method to support students' understanding of staff notation in music education. Based on the statements above, this study aims to describe the development process of interactive PowerPoint-based learning materials on staff notation, to evaluate the quality of the developed materials, and to examine their effectiveness in supporting junior high school students' music learning.

2. METHODS

This study employed a Research and Development (R&D) approach to develop interactive PowerPoint (PPT)-based learning media on staff notation. The R&D method is used to develop new products or improve existing ones and to evaluate their effectiveness (Sugiyono, 2015). The development procedure was based on the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation (Branch, 2009).

The analysis phase is the initial stage in the development process, aimed at identifying students' problems and needs in order to determine appropriate solutions (Rusmayana, 2021). This study collected data through observations and interviews with Cultural Arts teachers, as well as questionnaires distributed to eighth-grade students at SMP Negeri 14 Gresik to assess their understanding of cultural arts material, particularly music. The results of the analysis indicate that students still have difficulty understanding staff notation and demonstrate low learning motivation.

During the design phase, the framework and format of the materials were developed to align with students' characteristics and the subject matter. Based on Branch (2009), this phase aims to create a meaningful learning experience through engaging presentation strategies, communicative visual design, and interactive features that encourage user engagement. The interactive PPT-based media on

staff notation was designed to present the material systematically, incorporating audio and visual components, as well as interactive elements such as navigation buttons and practice exercises with feedback. Instruments for validation by media experts, subject matter experts, and student questionnaires were also developed during this phase.

The development stage involves integrating text, images, and other supporting elements based on the design until the interactive PPT-based media on staff notation is fully developed (Winaryati et al., 2021). The development phase involved creating interactive PowerPoint presentations using the Canva platform. The developed media were then validated by subject matter experts and media experts to assess their suitability. The validation results served as the basis for revising the content and media. Subsequently, the implementation phase was conducted on a limited scale, involving eighth-grade students and Cultural Arts teachers at SMP Negeri 14 Gresik. During this phase, the media were used in the learning process to obtain user feedback. The evaluation phase was conducted formatively at each stage of development, taking into account feedback from validators and the results of the pilot testing to ensure that the developed media were suitable for use in learning.

The subjects of this study consisted of eighth-grade students and Cultural Arts teachers at SMP Negeri 14 Gresik. The research instruments consisted of validation sheets for subject matter experts and media experts, as well as student questionnaires using a 4-point Likert scale. Data were collected through observation, interviews, questionnaire distribution, and document analysis as supporting data. The collected data were analyzed using a descriptive approach, both qualitative and quantitative. Qualitative data, in the form of suggestions and feedback from validators, were presented descriptively, while quantitative data were analyzed by calculating percentage scores to assess the appropriateness and effectiveness of the media. All scores were then summed and converted into percentages using the following formula:

$$\text{Percentage} = \frac{\text{Obtained Score}}{\text{Maximum Score}} \times 100\%$$







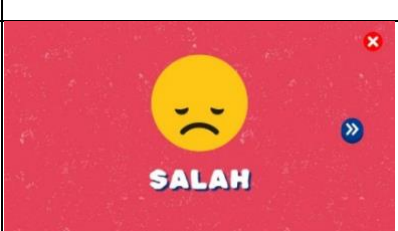
3. RESULTS AND DISCUSSION

3.1 The Process of Developing Interactive PPT Based Educational Media on Staff Notation

During the design phase, learning objectives and the media structure including staff notation content, interactive navigation, and evaluation quizzes were determined. The media was designed using Canva, with emphasis on visual appeal, readability, and interactivity. In addition, instruments for validation by subject matter experts and media experts, as well as student questionnaires, were developed at this stage. The development phase resulted in an interactive PowerPoint presentation equipped with audio, animations, and quizzes with feedback. The following presents an overview of the interactive PowerPoint-based media on staff notation:

Table 1. Interface of Interactive PowerPoint-Based Learning Media on Staff Notation

No.	Interface	Description
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1.		<p>The first slide of the PowerPoint presentation displays the media credits. Clicking the arrow button on the right navigates to the next slide.</p>
2.		<p>The home slide serves as the main interface of the media, featuring the 'Learn' and 'Games' sections. It also includes learning objectives, learning outcomes, and a teacher's guide to support its use.</p>
3.		<p>This slide is part of the 'Learn' feature, which presents staff notation material, including its definition, components, and how to read simple notation</p>
4.		<p>This slide appears when the 'Musical Note Elements' button is selected. It provides more detailed information about the elements of staff notation. Selecting the 'Content' button directs users to the corresponding content slide based on the chosen section.</p>
5.		<p>This slide appears when the 'Play' button in the game section is selected. It contains two buttons, each corresponding to a different type of game.</p>
6.		<p>This slide is displayed as feedback when a student provides a correct answer to a quiz question</p>
7.		<p>This slide appears as feedback when a student answers a quiz question incorrectly.</p>

The developed media were subsequently validated by subject matter experts and media experts. The implementation phase was then conducted in a class of 28 eighth grade students at SMP Negeri 14 Gresik. The lesson was carried out in a single session using interactive PowerPoint based media, during which students demonstrated

enthusiasm and active engagement in the learning activities. Evaluation was conducted at each stage of media development, and the results were used as a basis for improving quality, ensuring that the developed media were as effective as possible.

3.2 Quality of Interactive PPT Based Learning Materials on Staff Notation

The quality of the media was assessed through validation by subject matter experts and media experts. The following presents the results of the validation process.

Table 2. Results of Subject Matter Expert Validation

No.	Assessment Aspect	Score	Maximum Score
1	Alignment of the material with learning objectives	4	4
2	Alignment of the material with the curriculum	4	4
3	Accuracy of concepts and content	3	4
4	Consistency of terminology and musical notation	3	4
5	Coherence and systematic presentation	4	4
6	Depth of the material in accordance with students' characteristics	4	4
7	Clarity and comprehensibility of language	3	4
8	Support for student engagement and understanding	4	4
Total		29	32

The validation results from the subject matter experts yielded a score of 29, with a suitability rate of 90.6%, categorizing the media as 'highly suitable'. The following presents the validation results from the media experts.

Table 3. Media Expert Validation Results

No	Assessment Aspect	Score	Maximum Score
1	Alignment of the media with students' characteristics	4	4
2	Quality of the media's visual design	3	4
3	Readability of text and visual elements	4	4
4	Audio quality of the media	3	4
5	Systematic presentation of the media	4	4
6	Clarity and functionality of media navigation	3	4
7	Ease of use of the media	4	4
8	Interactivity of the media	3	4
Total		28	32

The validation results from media experts yielded a score of 28, with a suitability rate of 87.5%, categorizing the media as 'highly suitable'.

3.3 Effectiveness of Interactive PowerPoint Based Learning Media on Staff Notation

The effectiveness of the media was assessed through a student response questionnaire. The following presents the results of the questionnaire administered after the use of interactive PowerPoint based learning media on staff notation during classroom instruction.

Table 4. Student Response Questionnaire Results

No.	Assessment Aspect	Score	Maximum Score	Presentation
1	Kejelasan materi not balok	106	112	94,6%
2	Kemudahan memahami materi	102	112	91,1%

3	Daya tarik media dalam pembelajaran	106	112	94,6%
4	Keterlibatan siswa selama pembelajaran	104	112	92,9%
5	Media mempermudah proses belajar	102	112	91,1%
Total		520	560	92,8%

The results of the student response questionnaire yielded a score of 520, corresponding to 92.8%, categorizing the interactive PowerPoint-based media on staff notation as 'highly effective'.

The results of this study indicate that the use of interactive PowerPoint based learning media on staff notation, developed using the ADDIE model, can address challenges in music education, particularly in learning staff notation. The analysis phase revealed that teacher centered instruction led to low student motivation and understanding. This finding is consistent with learning theories suggesting that instructional processes which do not actively engage students tend to be less effective. During the development phase, the media were designed by integrating visual, audio, and interactive elements. The systematically organized content, combined with navigation features and interactive quizzes, proved effective in enhancing student engagement in the learning process. This suggests that the use of interactive PPT based media on staff notation can provide a more effective learning experience. Based on validation results from subject matter experts and media experts, the developed media were categorized as "highly suitable," indicating that they meet the criteria for content appropriateness, structured presentation, and visual quality. This finding supports the view that high quality instructional media should be systematically organized and aligned with students' characteristics. Furthermore, an effectiveness rate of 92.8% demonstrates the ability of the interactive PPT to support students' understanding, foster interest, and promote engagement in learning.

4. CONCLUSION

Based on the research findings and discussion, it can be concluded that the development of interactive PowerPoint (PPT) based learning media on staff notation was carried out using the ADDIE model, which includes the stages of Analysis, Design, Development, Implementation, and Evaluation. Each stage was conducted sequentially, starting from needs analysis, media design, product development, limited implementation, to evaluation for media refinement. Based on validation results from subject matter experts and media experts, the developed media were categorized as "highly suitable," with percentages of 90.6% and 87.5%, respectively. These results indicate that the interactive PPT based media on staff notation meet the criteria for content appropriateness, systematic presentation, visual quality, interactivity, and ease of use. The effectiveness of the media is demonstrated by the student response questionnaire results, which reached 92.8%, categorizing the media as "highly effective." This indicates that the use of interactive PPT based media on staff notation supports students' understanding and enhances their interest and active participation in music learning. Thus, the developed interactive PPT based learning media on staff notation are considered suitable and effective for use in junior high school music education.

AUTHOR'S CONTRIBUTION

The first author served as the principal investigator and was responsible for all stages of the research, including conceptualization, methodology development, data collection and analysis, and manuscript preparation from the initial draft to the final revision. The second author acted as the supervisor, providing guidance and oversight throughout the research process, validating the findings, and contributing through manuscript review and editing.

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