

Design of HOTS-Based Learning Evaluation for Ensemble Musical Instruments in the Form of Quizizz Application at MTS 2 Negeri Medan

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ABSTRACT

This research aims to develop a learning evaluation design for ensemble musical instruments based on Higher Order Thinking Skills (HOTS) using the Quizizz application at MTS 2 Negeri Medan. The background of the problem faced is the use of conventional evaluation methods that are less effective in measuring students' critical thinking abilities. This study employs a qualitative approach with a descriptive design, involving validation from subject matter experts and media experts, as well as a usability test involving 32 students. The results indicate that the developed evaluation design meets the feasibility criteria with an average score of 4.0 from subject matter experts and 4.7 from media experts, as well as an average score of 4.5 from the usability test, indicating that the Quizizz application can enhance student motivation and engagement in learning. The discussion emphasizes the importance of integrating technology in learning evaluation to create an interactive and engaging learning experience. The conclusion of this research is that the HOTS-based evaluation design developed is feasible to implement and can improve the quality of ensemble musical instrument learning, as well as provide recommendations for the application of similar methods in other schools and further research on the use of technology in education.

Keywords: First Keyword, Second Keyword, Third Keyword, Forth Keyword, Fifth Keyword

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INTRODUCTION

Education is one of the essential aspects of human resource development. In line with this, in the field of Music Education, teaching ensemble musical instruments plays a significant role in shaping students' character and creativity (Natonis et al., 2024). Educators must have a well-planned set of learning tools as a guide in the teaching and learning process. These learning tools not only include teaching materials but also effective evaluations to measure student achievement (Asrul et al., 2022). A good evaluation can provide constructive feedback for both students and teachers, as well as assist in improving the learning process in the future.

In the modern education era, learning approaches that emphasize the development of higher-order thinking skills, or Higher Order Thinking Skills (HOTS), are becoming increasingly important. HOTS encourages students not only to remember information but also to analyze, evaluate, and create new knowledge (Ananda et al., 2020). This aligns with the demands of the curriculum, which expects students to think critically and creatively in facing various challenges. Therefore, it is crucial for teachers to design evaluations that measure not only basic knowledge but also students' critical thinking abilities.

Music education, particularly in ensemble instruments, has a broad impact on student development. Through musical activities, students not only learn about the techniques of playing instruments but also learn to collaborate in groups, appreciate differences, and develop self-discipline (Sidabutar, 2018). Ensemble activities teach students to listen to one another, communicate effectively, and contribute to achieving common goals (Maharani & Desyandri, 2024). Thus, music learning focuses not only on technical aspects but also on the social and emotional development of students.

Although music education in Indonesia has progressed, there are still gaps in the implementation of effective evaluation methods, especially in ensemble musical instrument learning. Many schools still use traditional evaluation methods that focus on measuring basic knowledge without considering students' critical and creative thinking abilities. This results in students being less stimulated to develop the higher-order thinking skills needed in an increasingly complex world. Additionally, the lack of technology integration in the music teaching evaluation process poses its own challenges, as many teachers have yet to utilize digital tools that can enhance interactivity and student engagement in learning (Riyadi & Sukmayadi, 2023). One important component in this process is learning media. Learning media are tools used to convey information and stimulate students' thoughts, emotions, and motivation, thereby encouraging the learning process (Hasan et al., 2021; Wahyudi & Sari, 2016; Zulfikar & Hendrawan, 2024). Zainiyati (2017) states that media functions as a tool in the learning process, from the role of the teacher to the equipment used. The teaching and learning process is a system that involves various components working collaboratively to achieve goals.

Several previous studies have discussed the importance of HOTS in education and the application of technology in learning. Research by Susilo & Yanto (2019) shows that the development of higher-order thinking skills can enhance students' understanding of the subject matter. Additionally, research by Jannah & Pahlevi (2020) reveals that the use of technology-based applications, such as Kahoot!, can increase student motivation and learning outcomes. However, despite some studies highlighting the use of technology in music education, there is still limited research specifically examining the application of HOTS in the evaluation of ensemble musical instrument learning. Therefore, this study aims to fill that gap by designing evaluations that not only measure knowledge but also students' critical thinking abilities.

The novelty of this research lies in the development of a HOTS-based evaluation design for ensemble musical instruments using the Quizizz application. This study not only focuses on the technical aspects of playing musical instruments but also integrates elements of critical and creative thinking into the evaluation process. By utilizing technology, this research offers a new, interactive, and engaging approach for students, which is expected to enhance their involvement and motivation in music learning. Furthermore, this study contributes to the development of more comprehensive evaluation methods in music education that can be adapted by other schools in Indonesia.

This research aims to develop an effective evaluation design in ensemble musical instrument learning, focusing on the application of HOTS. By using the Quizizz application, it is hoped that the evaluations conducted can be more engaging and encourage students to think critically. Additionally, this study aims to contribute to the development of evaluation methods in music education and improve the quality of learning at MTS 2 Negeri Medan. The urgency of this research is high, considering the importance of developing higher-order thinking skills in today's education. With the increasing demands to prepare students for global challenges, music education must adapt and provide relevant learning experiences. This research is expected to provide solutions for teachers in designing more effective and engaging evaluations, as well as assist students in developing the skills necessary for success in the future. Moreover, the results of this study can serve as a reference for the development of music education curricula in Indonesia and encourage broader use of technology in the learning process.

METHOD

This research employs a Mixed Method approach with a Research & Development (R&D) method. The 4D model was chosen to develop a HOTS-based learning evaluation design for ensemble musical instruments using the Quizizz application at MTS 2 Negeri Medan, which consists of four stages: Define, Design, Development, and Disseminate. This study will also explain the understanding and depiction of the phenomena occurring in ensemble musical instrument learning, as well as explore how the application of HOTS in evaluation can influence students' learning processes. The research was conducted at MTS Negeri 2 Medan from January to March 2022. The subjects of this study included students and teachers at MTS 2 Negeri Medan. The population consisted of 121 individuals, and the sample determined by the researcher included two cultural arts teachers and 32 students from class VII-2.



Figure 1. 4D Model (Thiagarajan et al., 1974)

Data in this study were collected through several techniques, namely observation, interviews, and the distribution of questionnaires. Observations were conducted to directly observe the learning process of ensemble musical instruments, including the interaction between teachers and students, as well as the use of the Quizizz application in evaluations. Semi-structured interviews were conducted with teachers and students to gain deeper insights into their experiences in learning and evaluation. Additionally, questionnaires were distributed to students to measure their perceptions of the use of the Quizizz

application and the application of HOTS in evaluations. The data obtained from these various sources are expected to provide a comprehensive picture of the effectiveness of the developed evaluation design.

The research instruments used in this study consist of questionnaires designed to collect both quantitative and qualitative data. The questionnaire includes questions related to the HOTS-based learning evaluation of ensemble musical instruments. The questions in the questionnaire are designed to measure the effectiveness of the evaluation design, student motivation, and their engagement in the learning process using a Likert scale (Arikunto, 2010). Additionally, this instrument also includes items incorporated into the Quizizz application, which are designed to test students' higher-order thinking abilities.

The validation of the research instruments was conducted by two experts: a subject matter expert and a media expert. The subject matter expert was responsible for assessing the alignment of the questions with the established basic competencies and ensuring that the questions adhered to HOTS principles. Meanwhile, the media expert evaluated the appearance and usability of the Quizizz application as an evaluation medium. The validation process involved discussions and feedback, where suggestions for improvement from both experts were used to revise and refine the research instruments before they were applied in the trial.

After the data were collected, analysis was conducted using qualitative descriptive analysis techniques. Data processing in this study was carried out using both quantitative and qualitative analysis techniques. Quantitative data were obtained from the questionnaires completed by students, expressed in numerical form. To analyze the quantitative data, the researcher calculated the total average for each component using the formula $X_i = \sum X / n$, where X_i is the average score, $\sum X$ is the total score, and n is the number of assessors. Additionally, the researcher summed the averages of each component to obtain an overview of the effectiveness of the evaluation design. Meanwhile, qualitative data were obtained from the critiques and suggestions provided by the subject matter and media experts, as well as students' responses regarding their experiences using the Quizizz application. This qualitative data were analyzed descriptively to provide a deeper understanding of the effectiveness and impact of the developed evaluation design, thereby offering valuable insights for further improvement and development.

RESULT

The results of the study were obtained through a series of processes that included validation by subject matter and media experts, as well as usability testing involving students. These findings will be detailed in several subsections, which include a description of the learning process, the application of HOTS in evaluations, student responses to the use of the Quizizz application, the impact on higher-order thinking skills, and recommendations for further development. Thus, the results of this study are

expected to provide a comprehensive overview of the effectiveness of the developed evaluation design and its contribution to improving the quality of music learning in schools.

Analyze

The identified issue that serves as a reference in this study is the evaluation methods used by teachers in ensemble musical instrument learning. It was found that teachers still apply conventional methods, where evaluations are conducted by distributing or reading questions that students then answer on paper. In an era of rapid technological advancement, it is unfortunate if this method continues to be maintained without utilizing existing technology. The researcher innovated by developing an evaluation for ensemble musical instrument learning using the Quizizz application. It is hoped that the use of this application can enhance students' enthusiasm and seriousness in participating in ensemble musical instrument learning.

To gather relevant information, the researcher conducted observations and interviews with the student affairs department at the school. Based on the existing issues, the researcher designed a HOTS-based evaluation for ensemble musical instruments using the Quizizz application. The Quizizz application was chosen because it is an engaging game-based platform that is expected to increase student motivation and interest in learning. One of the advantages of this application is the time limit for answering each question, which can reduce the likelihood of cheating, such as copying. The use of the Quizizz application is also categorized as electronic learning (e-learning), where the evaluation process requires an internet connection between teachers and students.

Design

The product design at this stage involves four important steps in designing a HOTS-based learning evaluation for ensemble musical instruments using the Quizizz application. These steps include selecting materials, creating evaluation materials, organizing evaluation materials, and displaying the evaluation format in the Quizizz application.

The evaluation materials for ensemble musical instrument learning are designed to cover Basic Competencies (KD) 3.3, which focuses on understanding the basic concepts of playing simple musical instruments individually, and KD 3.4, which relates to understanding the basic concepts of ensemble musical instruments. This material has been taught by the teacher to the seventh-grade students at MTS 2 Negeri Medan. The researcher then designed HOTS-based evaluation questions, referring to Bloom's taxonomy with a focus on cognitive domains C4 (analyzing), C5 (evaluating), and C6 (creating). The questions designed in this study are HOTS-based, encompassing higher-order thinking abilities within the cognitive domain. The researcher created questions based on indicators determined by the verbs in

cognitive domains C4, C5, and C6. A total of 15 multiple-choice questions were designed with various formats, including questions in the form of sentences, images, audio, and video.

The designed questions include analysis of musical performances, identification of musical instruments, and understanding of ensemble concepts. Each question is designed to encourage students to think critically and creatively, in line with the objectives of HOTS-based evaluation. After the evaluation materials were completed, the next step was to organize these questions into the Quizizz application. The organization process was carried out in two stages. First, the researcher created an account on the Quizizz platform by selecting the option as a teacher. Once the account was created, the researcher entered the questions into the application by selecting the appropriate question type, which is multiple choice. The researcher could also add multimedia elements such as images, videos, and audio to make the questions more engaging. A time limit for answering the questions was also set to increase the challenge for students. The results of the creation and organization of the evaluation materials for ensemble musical instruments in the Quizizz application can be seen from two different views: the view for teachers and the view for students. The quiz view for teachers can be accessed via a laptop or computer, while students can answer the questions through a laptop or smartphone. This design is intended to be interactive and engaging, so that students do not feel bored while participating in the evaluation. Thus, the Quizizz application not only functions as an evaluation tool but also as an enjoyable learning medium.

Development

The development of the HOTS-based learning evaluation design for ensemble musical instruments begins with the validation stage. This validation is conducted to assess the alignment of the questions with the material and the effectiveness of the evaluation questions that have been designed in the Quizizz application. Two types of validation are performed: validation by subject matter experts and media experts. This assessment aims to ensure that the developed media meets the necessary standards and can be used effectively in the learning process (Damayanti & Dewi, 2021; Okpatrioka, 2023).

Table 1. Content Expert Validation

No	Aspect	Indicator	Rating Scale	Description
1	Questions	Alignment of questions with Basic Competencies (KD)	4	Good
		Level of question difficulty	4	Good
		Cognitive aspect content; affective aspects of the given questions	4	Good
		Clarity of the language used and comprehensibility	3	Satisfactory

2	Answers	Alignment of answer choices with the questions	5	Very Good
		Level of difficulty of answer choices	4	Good
		Cognitive aspect content, affective aspects of answers	4	Good
Total Score			64	Good
Average			4,0	

Validation by the subject matter expert was conducted by Dr. Lamhot Basani Sihombing, S.Pd., M.Pd, a lecturer in the Music Education Study Program at Universitas Negeri Medan. The validation process took place on March 14, 2022, where the validation results indicated that the designed evaluation questions were good, although there were some aspects that needed improvement. The validation results were expressed in quantitative numbers, with an average score of 4.0, indicating that the HOTS-based evaluation design is suitable for trial. The table of validation results by the subject matter expert shows that the aspects of question alignment with Basic Competencies (KD), question difficulty level, and language use in the questions were rated as good, while the clarity of the language was rated as satisfactory.

Table 2. Media Expert Validation

No	Aspects	Indicator	Rating Scale	Description
1	Design/Layout	Appropriateness of Theme/Color Selection	5	Very Good
		Appropriateness of Layout Proportions	5	Very Good
2	Typography	Appropriateness of Font Selection	5	Very Good
		Appropriateness of Font Size	5	Very Good
		Appropriateness of Font Colour	5	Very Good
3	Gambar	Image Composition	5	Very Good
		Image Size	5	Very Good
		Image Display Quality	5	Very Good
4	Questions	Media's ability through questions to enhance student motivation in ensemble music learning	5	Very Good
		Media's ability through questions to increase knowledge of ensemble music	5	Very Good
		Media's ability through questions to broaden perspectives	4	Good

5	Answers	Media's ability through multiple-choice questions to enhance student motivation in ensemble music learning	5	Very Good
		Media's ability through answer choices to enhance student motivation in ensemble music learning	5	Very Good
		Media's ability through answer choices to broaden students' perspectives	4	Good
Total Score			66	Very Good
Average			4,7	

Validation by the media expert was conducted by Mr. Raden Burhan SND, S.Pd., M.Pd, a master in graphic design and a lecturer in the Fine Arts Department at Universitas Negeri Medan. This validation took place on March 18, 2022, and the results indicated that the media display in the Quizizz application was good and suitable for trial. The average score obtained from the media expert validation was 4.7, categorized as very good. The assessed aspects included the appropriateness of theme selection, layout proportions, and the media's ability to enhance student motivation.



Figure 2. Process of the Trial

Table 3. Results of the Trial

No	Indicator	Total Score	Average	Description
1	Difficulty of the given questions	134	4,2	Good
2	Usefulness of the questions	149	4,6	Very Good
3	Alignment of the questions with the material	152	4,7	Very Good
4	Clarity of the questions	150	4,6	Very Good
Total		585	4,5	Very Good

Based on the validation results from the subject matter and media experts, the researcher made improvements according to the suggestions and feedback provided. These improvements included revisions to the question grid and the individual questions. The purpose of this improvement process is to ensure that the generated questions not only align with the material but also effectively measure students' higher-order thinking abilities.

The usability testing phase involved 32 students from class VII 2 at MTS 2 Negeri Medan, conducted on February 26, 2022. Students used their smartphones to log in to the Quizizz application and answer 15 multiple-choice questions that had been prepared. After answering, students were asked to fill out a rating questionnaire consisting of two aspects: content aspect and media aspect. The results of the usability testing showed that the HOTS-based learning evaluation design for ensemble musical instruments through the Quizizz application received an average score of 4.5, categorized as very good. The aspects of question usefulness and alignment of questions with the material received the highest scores, indicating that students felt the questions provided were relevant and beneficial for their learning.

Disseminate

The dissemination of research results regarding the HOTS-based learning evaluation design for ensemble musical instruments through the Quizizz application is conducted with the aim of introducing and implementing this innovative evaluation method in the educational environment, particularly at MTS 2 Negeri Medan and other relevant schools. This dissemination process involves several strategic steps designed to ensure that the research results can be accessed and applied widely.

The first step in disseminating the research results is to conduct socialization with teachers and educational staff at MTS 2 Negeri Medan. The researcher organized workshops and presentations explaining the HOTS-based evaluation design that has been developed, as well as the benefits of using the Quizizz application in music learning. During this socialization, teachers were provided training on how to use the Quizizz application, including how to create questions, set up quizzes, and analyze evaluation results. This aims to enhance teachers' understanding and skills in applying the new evaluation method.

After the socialization, the next step is the implementation of the evaluation design in ensemble musical instrument learning in the classroom. Seventh-grade students at MTS 2 Negeri Medan were given the opportunity to participate in the evaluation using the Quizizz application. This process not only involved testing the designed questions but also provided direct feedback from students regarding their experiences using the application. The results of this implementation are expected to provide a clearer picture of the effectiveness of the HOTS-based evaluation method in enhancing student motivation and learning outcomes.

To reach a broader audience, the research results are also disseminated through social media and publications. The researcher utilized platforms such as Facebook, Instagram, and educational blogs to share information about the developed evaluation design. Additionally, the researcher published articles in educational journals and music education seminars, allowing the research results to be accessed by other educators and researchers interested in applying similar methods in their schools.

The dissemination of research results also involves collaboration with other educational institutions, both at the local and national levels. The researcher aims to establish partnerships with other schools that have music education programs to implement this HOTS-based evaluation design. Through this collaboration, it is hoped that there can be an exchange of experiences and best practices in the application of innovative evaluations, as well as an expansion of the positive impact of this research in the field of education.

After dissemination, it is important to evaluate the implementation of the evaluation design that has been carried out. The researcher collects feedback from teachers and students regarding the effectiveness and challenges faced during the evaluation process. The results of this evaluation will be used to make further improvements and developments to the evaluation design, thereby continuously enhancing the quality of ensemble musical instrument learning in schools.

Discussion

This discussion aims to analyze and interpret the research results regarding the HOTS-based learning evaluation design for ensemble musical instruments using the Quizizz application. This study shows that the implementation of HOTS-based evaluation can enhance the quality of learning and student engagement in the teaching and learning process.

The evaluation design developed in this research focuses on the relevant Basic Competencies (KD) for ensemble musical instrument learning, specifically KD 3.3 and KD 3.4. Referring to Bloom's taxonomy and cognitive domains C4-C6, the designed questions not only test basic knowledge but also analytical, evaluative, and creative abilities. This aligns with the curriculum demands that expect students to possess higher-order thinking skills (Riyadi & Budiman, 2023). Thus, this evaluation design not only meets curriculum standards but also encourages students to think critically and creatively.

The research results indicate that the use of the Quizizz application in evaluating ensemble musical instrument learning has a positive impact on student motivation and engagement. This application offers an interactive and enjoyable learning experience, where students can answer questions in various formats, including images, audio, and video. This makes the evaluation process more engaging and less monotonous. Additionally, the instant feedback feature provided by the application allows students to immediately know their answer results, which can enhance their motivation to learn.

The validation process by subject matter and media experts shows that the developed evaluation design is good, with an average score of 4.0 for subject matter validation and 4.7 for media validation. However, the improvement suggestions from the validators highlight the importance of expert involvement in the evaluation design development process. The improvements made based on the validators' input demonstrate that a good evaluation design is the result of collaboration between researchers and education practitioners. This emphasizes the importance of validation in ensuring the quality and feasibility of educational products (Ferdiansyah et al., 2020; Roffiq et al., 2017; Wahyudi & Sari, 2016).

The usability testing involving 32 students shows that the HOTS-based learning evaluation design through the Quizizz application received an average score of 4.5, categorized as very good. The aspects of question usefulness and alignment of questions with the material received the highest scores, indicating that students felt the questions provided were relevant and beneficial for their learning. These results show that HOTS-based evaluation is not only effective in measuring students' abilities but also enhances their understanding and interest in ensemble musical instrument learning.

This research has significant implications for music education in Indonesia, particularly in developing more effective and relevant evaluation methods. By integrating technology into learning evaluations, teachers can create a more dynamic and engaging learning environment, as well as enhance student interaction and involvement in the learning process (Ardipal, 2020; Budiyo, 2020; Syamsuar & Reflianto, 2019). The application of HOTS (Higher Order Thinking Skills) evaluation allows students not only to memorize information but also to develop critical, analytical, and creative thinking skills that are essential for facing real-world challenges (Jannah & Pahlevi, 2020; Susilo & Yanto, 2019). These skills are crucial, given that today's educational landscape demands students to think independently and solve complex problems. Therefore, it is important for schools to consider implementing this innovative evaluation method in their curricula to better prepare students for the future.

CONCLUSIONS

The research results indicate that the developed evaluation design has met the feasibility criteria based on validation from subject matter and media experts. The average score obtained from the validation shows that the designed questions align with the established basic competencies and are capable of measuring students' higher-order thinking abilities. Additionally, the usability testing involving students demonstrates that the use of the Quizizz application in learning evaluations can significantly enhance student motivation and engagement.

The implications of this research are very important for the development of music education in Indonesia. By integrating technology into the evaluation process, teachers can create a more interactive and engaging learning experience for students. The application of HOTS-based evaluation not only helps

students understand the learning material but also encourages them to think critically and creatively. This aligns with the curriculum demands that expect students to possess the higher-order thinking skills necessary to face challenges in the era of globalization.

Based on the research results, several recommendations can be made. First, it is suggested that other schools consider implementing HOTS-based evaluation designs in music education and other subjects. The use of applications like Quizizz can be adapted for various learning contexts, thereby improving the quality of evaluations conducted. Second, further research is needed to explore the use of other applications in learning evaluations and to examine the long-term impact of HOTS-based evaluation implementation on student achievement. Finally, it is important for teachers to continue developing their skills in using technology in education to maximize the potential of technology in enhancing the quality of education.

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