Optimizing PPKn Formative Test in Elementary School Level with Digital Food Education Game

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This research discusses the importance of integrating digital learning media, particularly interactive formative tests based on regional food education games, to enhance the learning outcomes of Pancasila and Citizenship Education (PPKn) at the Elementary School (SD) level. The main goal of PPKn is to cultivate good character and citizenship in students. In the digital era, the use of technology is considered essential to provide a more interactive and engaging learning experience. This study employs a qualitative method and a case study framework to propose the implementation of interactive formative tests through digital learning media, focusing on the use of regional food education games. The research instruments involve the development and application of interactive formative tests based on food education games for SD students. Data are collected through classroom observations, interviews with teachers, and the analysis of formative test results. The findings indicate that the implementation of interactive formative tests through digital learning media, particularly utilizing regional food education games, positively contributes to the learning outcomes of PPKn for SD students. Educational games not only enhance knowledge of traditional foods but also facilitate discussions on local wisdom, cultural diversity, and a sense of love for the homeland. The effectiveness of interactive formative tests is evident in the increased active participation of students in the learning process. This study suggests that the implementation of interactive formative tests through digital learning media, especially in the form of educational games, can serve as an effective model to improve PPKn learning outcomes at the SD level. Support from schools, teachers, and educational stakeholders is crucial to integrate technology in a relevant and meaningful way into student learning.

KeyWords: *Pancasila and Citizenship Education (PPKn), Formative, Learning Media*

1   Introduction

Pancasila and Citizenship Education (PPKn) are integral parts of the elementary school curriculum[1]. The main goal is to shape students' character and citizenship, teaching moral values, ethics, and introducing basic concepts of national life. In the face of digital era dynamics, integrating digital learning media becomes a necessity for a more interactive and engaging learning experience, catering to the needs of the digital generation in understanding and applying PPKn values in daily life.

Efforts to enhance the effectiveness of PPKn learning at the elementary level include the strategic choice of interactive formative tests. These tests serve not only as evaluation tools but also as means to provide quick feedback to both students and teachers. Utilizing digital learning media for the implementation of interactive formative tests is expected to optimize PPKn learning outcomes at the elementary level. The research focuses on a case study of using regional food education games as an innovative and engaging form of digital learning. Importance of PPKn education at the elementary level is undeniable, as it forms the foundation for character development during this formative period. PPKn introduces basic concepts of democracy, citizenship rights and responsibilities, and moral values that serve as the cornerstone of communal living. However, the challenge lies in delivering comprehensive understanding to students, necessitating a teaching approach aligned with the characteristics of today's youth.

The development of information and communication technology (ICT) significantly impacts education[2]. Students in this digital era grow with high exposure to technology, demanding education to adapt to remain relevant and engaging. Integrating digital learning media is not merely following trends but a necessity to create a motivating, relevant, and age-appropriate learning environment. In the context of PPKn in elementary schools, utilizing digital learning media provides an opportunity to make learning more interactive and profound. Interactivity through digital media creates a dynamic and stimulating learning experience, aiding students in better understanding and internalizing PPKn concepts. Interactive formative tests play a key role in improving learning. As a continuous evaluation tool, formative tests provide a more accurate picture of students' understanding of the learning material. By integrating interactive elements, formative tests become not only assessment moments but also opportunities for students to actively engage in the learning process. The use of interactive formative tests in PPKn learning offers dual advantages. First, teachers can quickly assess the extent to which students understand the taught PPKn concepts. Second, students receive immediate feedback, understanding their

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strengths and weaknesses, and can correct their understanding before the material becomes the basis for further learning. In the context of implementing interactive formative tests, a case study of regional food education games is the research focus. Educational games have their own allure, creating a enjoyable learning experience while retaining the essence of education[3]. By designing interactive formative tests integrated into regional food education games, it is hoped to create an engaging learning environment that captures students' attention, stimulates curiosity, and enhances understanding of cultural diversity in Indonesia.

This case study will explore how the implementation of interactive formative tests through digital learning media, particularly in the form of educational games, can open new avenues for PPKn teaching at the elementary level. By delving into student experiences and teacher responses to regional food education games, this research aims to provide in-depth insights into the potential and challenges of optimizing PPKn learning outcomes in this digital era.

2 Research Methodology

Research Methodology involves the initial step of conducting a field study at SD Ngentak. The author conducted this field study to identify the issues that would be addressed in the research. It was found that the main issue among children was the use of smartphones only for playing games, without any educational content. Therefore, the author aimed to develop a game application with educational content. The second step involved determining the literature study by referring to books and journals. The subsequent step was to collect data, including the names of foods and system testing data obtained from both book sources and SD Ngentak. The final step comprised data processing and drawing conclusions and recommendations in the research.

3 Results

Figure 1 explains how to answer each provided question by selecting one letter at a time corresponding to the alphabet in the correct answer. The clicked letters will then proceed to the boxes in the order of the user's clicks within the application. The letters are in the form of the alphabet, and they are random for each level.

Fig. 1   Digital Food Education Game

Figure 2 illustrates the display when a user correctly guesses the provided question image. There is information stating "Bagus Sekali," indicating that the filled answer is correct, and information about earning an additional 1 point, along with the "Lanjut" button to proceed to the next level.

Fig. 2   The Right Answer

This research conducted User Testing by involving 33 children using the Pre-Test and Post-Test methods. The aim was to measure the level of user knowledge and understanding of traditional Indonesian regional foods. During the testing, two trials were conducted. The first trial involved the Pre-Test, where users directly answered questions on paper. During the Post-Test, the author provided some understanding to the users about what Traditional Food Game is and how to play it. After users had played sufficiently, the author presented the Post-Test questions, which were the same as the Pre-Test questions but with a randomized order. The sample of the questions is shown in Figure 3 and the process is documented in Figure 4. The details of the User Testing can be seen in Table 1 User Testing Details.
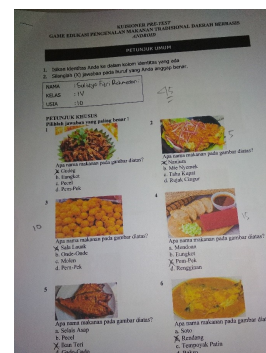

Fig. 3   Pre-Game Educational Formative Test

Fig. 4   Documentation

3.1   Discussion.

3.2 Average Post-Test and Pre-Test Scores. After conducting testing with users, the author obtained data from the Pre-Test and Post-Test. The data can be seen in Table 1, the User Testing Results table.

Table 1   User Testing Results

No.	Name	Pre-Test	Post-Test
1	Tomi	60	80
2	Fannisa	50	65
3	Fadil	55	70
4	Rachel Visca P	55	60
5	Kirani	60	70
6	Alvisya Rahma Darilicia	50	65
7	Ran Ratu Sera	15	45
8	Julian Arkarna.M	50	65
9	Sulistyo Fitri R.	45	80
10	Nashwa Rizky Nur.A	45	80
11	Anggraini Vina.A	65	75
12	Intan Laras Nura	45	55
13	Satya Putra Prodipta	35	80
14	Desti Adela	65	90
15	Galuh	45	75
16	Rara	60	75
17	Kezia Natalia P	45	90
18	Syla	45	90
19	Faiz Ahmad.S	35	80
20	Lativah Vania Puspita.N	35	55
21	Avis Trisnawati	40	55
22	Samito Moralkes	40	85
23	Julian Arkarna.M	50	70
24	Jessica Tasya Aprilio	45	80
25	Raya Syfa Aprillia	50	60
26	Nur Hafiza	20	60
27	Fano	30	80
28	Syifa Latifah	50	90
29	Damar	60	65
30	Elshaday	45	60
31	Karin	50	75
32	Adima Alika Nina L.	40	50
33	Brian Surya.D	40	55

From Table 1, it can be observed that there is a significant difference between the average scores of the Pre-Test and Post-Test. The average score for the Pre-Test is 45, while the average score for the Post-Test is 70. This indicates that children's knowledge of traditional foods tends to improve after using the Traditional Food Recognition Game Application. The average graph regarding the improvement in answering questions during the Pre-Test and Post-Test can be seen in Figure 5, the Average Graph of Pre-Test and Post-Test Answering.

Table 3   Result

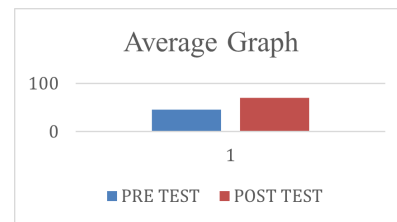| Question Number	Score 1	2	3	4	5	Total Score	Percentage (%)
1			6	88	50	144	82.28
2			3	84	60	147	84
3			24	76	35	135	77.14
4			6	88	50	144	82.28
5			6	56	90	152	86.85
6			9	76	60	145	82.85
Average							82.56

Fig. 5   Average Graph Pre-Test dan Post Test

3.3 Satisfaction Questionnaire for Game Usage. After obtaining the results of the Pre-Test and Post-Test scores, the author then used a questionnaire to assess the level of student satisfaction in using digital media in the form of a game as a companion for student learning materials. The questions for the questionnaire distributed to students can be found in Table 2, the Student Satisfaction Questionnaire.

Table 2   Student Satisfaction Questionnaire

No.	Question
1	Anda puas dengan manfaat aplikasi yang digunakan
2	Aplikasi membantu anda dalam belajar tentang masakan tradisional
3	Anda puas dengan informasi yang disajikan
4	Anda merasa nyaman ketika menggunakan aplikasi
5	Anda menganjurkan orang lain untuk menggunakan aplikasi tersebut
6	Anda puas dengan manfaat aplikasi yang digunakan

For each question presented, there are 5 answer options with scores as follows: answer 1 with a score of 1, answer 2 with a score of 2, answer 3 with a score of 3, answer 4 with a score of 4, and answer 5 with a score of 5. To determine the interval range from 0% to 100%, the formula I = 100 / number of answer choices is used. Thus, the interpretation criteria based on the intervals are as follows:
0% - 19.99%: Very Bad
20% - 39.99%: Bad
40% - 59.99%: Fair
60% - 79.9%: Good
80% - 100%: Very Good
The questionnaire results can be seen in the Appendix. The following are the results of the testing with 33 respondents and 6 questions. The result is shown in Table 3

Based on Table 3, the average percentage result for the student satisfaction display is 82.56%, thus falling into the criteria of "Very Good." From the questionnaire data above, a bar chart was created to illustrate the data distribution of user satisfaction percentages obtained from testing 33 respondents through the distributed questionnaire. The bar chart for user satisfaction percentages can be seen in Figure 6.
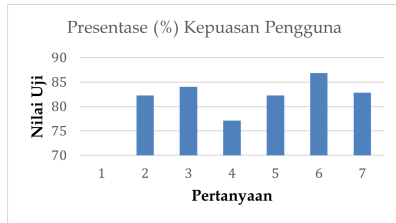
Presentase (%) Kepuasan Pengguna

Fig. 6 Percentage Satisfaction Chart for Students

4 Conclusions

Research on the implementation of interactive formative tests through digital learning media in the context of Pancasila and Citizenship Education (PPKn) at the Elementary School (SD) level, with a case study using regional food educational games, shows positive results in optimizing learning outcomes. The initial pre-test data of 40 significantly increased to 70 in the post-test, illustrating an improvement in students' understanding after the implementation of this method.

The research results indicate that the implementation of interactive formative tests through digital learning media, especially by utilizing regional food educational games, successfully enhances active student participation in the learning process. The increase in scores from the pre-test to the post-test reflects the effectiveness of this approach in improving students' understanding of PPKn material. Regional food educational games not only serve as enjoyable learning tools but also open up discussions about local values, culture, and patriotism.

Overall, the research findings suggest that the implementation of interactive formative tests through digital learning media, especially by integrating educational games, can be considered an effective model for improving PPKn learning outcomes at the elementary level. In the face of the digital era, this approach can serve as a foundation to optimize learning by creatively and interactively leveraging technology, thereby motivating and engaging students in the educational process.

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