



Development of Interactive Media Based On Quizzizz Paper Mode Science Education as an Effort to Improve the Character Profile of Pancasila Students

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Abstract: The digital era is one of the fields that influences the civilization of the 5.0 revolution on world mobility. Learning media as a tool that helps the learning process in presenting material in an interesting way so that the learning situation becomes effective, efficient, active and easy to understand by students. One of the innovations of learning media in the digital era is learning media based on Quizizz Paper - Mode which is a means to facilitate teachers in developing innovative media and for planning interesting learning and can accompany students in the learning process. The purpose of this study was to determine how the validity (by academic media and material experts), feasibility (by media and material expert teachers), and student responses through the implementation of interactive media design based on Quizizz Paper - Mode as an effort to create learning innovations in improving the character of Pancasila student profiles for students of SMAN 2 Biruen. The development of learning media based on Quizizz Paper - Mode Science education uses research and development methods. This study uses the ADDIE development model which is developed consisting of five stages: Analysis, Design, Development, Implementation and Evaluation. Data collection techniques and instruments with validation tests, feasibility tests, student responses through questionnaires. The results of the validity test from media experts obtained results of 85% with the category "Valid", and material experts 75% with the category "Valid". Based on the results of the feasibility test with teachers of SMAN 2 Bireun, the results were 87.50% with the category of feasible and the results of the student response assessment obtained a score of 87.30% with the category of interesting. For N-Gain percent, the average value obtained was 76.2407. This value is greater than 76.00. So it can be concluded that the questions given to students through quizzis paper mode can improve the character of Pancasila profile students. The design of the quizzis paper mode media and the questions chosen are very interesting in science education which aims to strengthen student character in the Pancasila student profile program.

Keywords: Quizizz Paper – Mode, research and development, Pancasila student profile

1. Introduction

The development of science and technology in the current era is very rapid, which requires a digital transformation of development through technology. This era is often also called the digital era, (Mulyani & Haliza, 2021: 101). The rapid development of technology today will continue to produce new patterns in learning and encourage rapid adaptation. In the learning process, the use and utilization of technology in the classroom has become a necessity as well as a demand in the global era (Susilowati, 2022). The use of learning media during the teaching and learning



process is important, both for educators and students (Soekanto et al., 2023). Learning media is a tool that can be used in the learning process with the aim of providing a deeper understanding of the subject matter (Nuranti et al., 2023; Ramadhan et al., 2023; Rezeki & Ishafit, 2017). Interactive learning media brings many benefits, including improving student learning outcomes (Pudjiati et al., 2024).

One concrete example that can be used in interactive technology-based learning evaluation activities in Science education activities can use the Quizizz paper mode media. Quizizz paper mode is an interactive quiz that can be followed offline using Quizizz Paper - Mode sheets of paper (Abadi et al., 2023). For teachers, the paper model feature is very useful as a means of offline learning. In addition, the Quizizz paper printing mode eliminates the need for students to use smartphones or internet data. According to (Tarsono et al., 2024) QR codes in education are used so that the learning materials created can be used comfortably and effectively. The Quizizz feature with Paper Mode uses a QR code on a sheet of paper that can be used in offline learning, aiming to help teachers and students create creative face-to-face learning based on interactive, effective and efficient quizzes (Susilowati, 2022).

As a teacher who is one of the figures who has an important role in education, it requires teachers to have the ability to design learning, one of which is designing learning media that is in line with technology. Students who are in the exploration period, identification period, sensitive period and play period are golden periods that should not be missed. Therefore, an effective approach is taken to develop the profile of Pancasila students for students (Oktiningrum & Zuhroh, 2023). Efforts to realize the character of Pancasila Students through learning activities require the selection of appropriate learning media and learning instructions (Muhlisin et al., 2022).

Quizizz-based learning media can help teachers in integrating between online and face-to-face learning (Angelina et al., 2020). This also provides a new experience in learning for students so that the learning process can be more varied, interactive, and innovative which can improve student achievement (Kurniawan & Wijarnako, 2023) Learning innovation based on Quizizz Paper - Mode. By using Quizizz Paper - Mode, it will provide students with new additional media that are interesting and accompany students in learning because students in today's era cannot be forced to learn so this media becomes a companion for students.

2. Materials and Methods

2.1. Location and Subject of Research

Which will be implemented from April to August 2024.

2.2. Population and subjects

The subjects in this study were grade X students of SMAN 2 Bireuen, 2 media experts and 2 material experts and the object of this study was the development of interactive media based on Quizizz Paper - Mode.

2.3. Types and Design of Research

The type of research conducted in this study is a research on the development of learning media based on Quizizz Paper - Mode using research and development methods. This study uses the ADDIE development model which is developed consisting of five stages: Analysis, Design, Development, Implementation and Evaluation. In this study, the stages of ADDIE model development carried out by researchers up to 4 stages of analysis, design, development, and implementation. The selection of the ADDIE model is based on the consideration that this model is developed systematically and is based on the theoretical foundation of learning design (Tegeh et al., 2015). Visually, the stages of the ADDIE model can be seen in the following image:

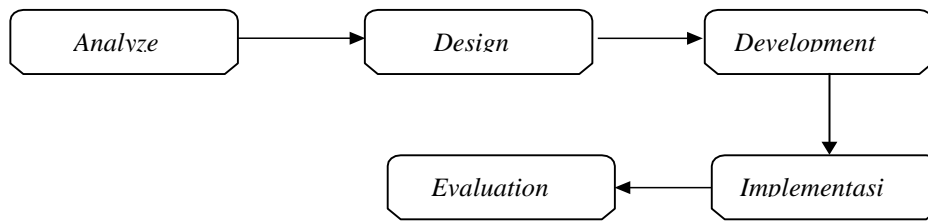


Figure 1. ADDIE model stages

2.4. Data Analysis

2.4.1. Validation Eligibility

The research data was processed using descriptive analysis with notice aspects related design multimedia interactive based on Quizizz Paper - Mode which reviewed from a number of aspect. According to Arikunto (2010) criteria evaluation on the feasibility of interactive multimedia based on Quizizz Paper - Mode is stated in presentation which is calculated using Pers (1).

$$\text{Percentage} = \frac{\text{Jumlah skor hasil pengumpulan data}}{\text{Jumlah skor maksimal}} \times 100\% \tag{1}$$

Epinur et al., (2014) stated that the percentage score for assessing the feasibility of Bilingual Mobile Learning shown as in Table 1.

Table 1. Percentage of Feasibility Assessment of interactive media based on Quizizz Paper – Mode

No	Achievement Level (%)	Qualification
1	80-100	very worthy/very worthy interesting
2	61-80	worthy/interesting
3	41-60	Moderate/sufficient
4	21-40	No worthy/not interesting
5	0-20	very No worthy/very worthy No interesting

Source: Arikunto (2010)

2.4.2. Expert Validation Questionnaire

Interactive media based on Quizizz Paper – The developed mode is tested for validity by providing a validation sheet to experts consisting of media experts and material experts to clarify the level of validity of the learning device. The scores obtained from all aspects assessed are then converted into percentages using the following formula:

$$P = \frac{\text{Jumlah Skor Hasil Pengumpulan Data}}{\text{Skor Kriteria}} \times 100\% \tag{2}$$

Table 2. Validity Clarification

Score (%)	Validity Level
81 – 100	Very Valid
61 – 80	Valid
41 – 60	Quite Valid
21 – 40	Less Valid

0 – 20	Invalid
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Source: Gitnita, dictionary, & Gusnedi (2018)

2.4.3. Teacher Eligibility Questionnaire

Student and teacher response data were obtained from the results of filling out the response questionnaire sheet. Participant educate And Teacher. Epineur et al., (2014) state that for analyze data which obtained from questionnaire distribution so use formula like on Press (3).

$$\%Score = \frac{Jumlah\ skor\ hasil\ pengumpulan\ data}{Jumlah\ skor\ maksimal} \times 100\% \quad (3)$$

The feasibility questionnaire used in this development was given to physics subject teachers. This questionnaire was used to see how feasible the multimedia was interactive based on Quizizz Paper – Fashion. The assessment used is a Likert scale. The scores obtained from all aspects assessed are then converted into percentages using the following formula:

$$P = \frac{Jumlah\ Skor\ Hasil\ Pengumpulan\ Data}{Skor\ Kriteria} \times 100\% \quad (4)$$

Table 3. Criteria for assessing feasibility testing

Score (%)	Validity Level
81 – 100	Very worthy
61 – 80	worthy
41 – 60	Quite decent
21 – 40	Not worthy
0 – 20	Not feasible

2.4.4. Student Response Questionnaire

The response questionnaire sheet was given to students. Researchers gave a questionnaire to students with the aim of seeing the feasibility of multimedia interactive based on Quizizz Paper – Mode developed by researchers. The scores obtained from all aspects assessed are then changed into percentage form using the following formula (Sugiyino, 2016).

$$P = \frac{Jumlah\ Skor\ Hasil\ Pengumpulan\ Data}{Skor\ Kriteria} \times 100\% \quad (5)$$

Table 4. Product Practicality Criteria

Score (%)	Criteria
81 – 100	Very interesting
61 – 80	interesting
41 – 60	Quite interesting
21 – 40	Less attractive
0 – 20	Not attractive

2.4.5. Student Response Questionnaire

According to Meltzer, the magnitude of the increase can be calculated using the following formula.

Table 5. N-Gain Score Equation

$$\text{N Gain} = \frac{\text{Posttest Score} - \text{Pretest Score}}{\text{Ideal Score} - \text{Pretest Score}}$$

N-Gain score acquisition category can be determined based on the N-Gain value or N-Gain percentage (%). The N-Gain value categories are as follows:

Table 6. Gain Score Categories

<i>N-Gain Value</i>	Category
$g > 0.7$	Tall
$0.3 \leq g \leq 0.7$	Currently
$g \leq 0.3$	Low

Source: (Meltzer, nd)

3. Results and Discussion

Media interactive based on Quizizz Paper Mode Science Education as an Effort to Improve Character profile Pancasila students. This study uses the ADDIE method. The development procedures carried out are analysis, design, development, implementation and evaluation. The following is a description of the research data conducted based on ADDIE, including the following

3.1. Analyze

This stage aims to determine the basic research problem which begins with conducting observations and interviews with school teachers in Bireun, namely SMAN 2. Through this stage, researchers get information from teachers that digital media can also be used to strengthen students' character in the Pancasila student profile. Therefore, researchers develop media interactive based on Quizizz Paper Mode Science Education as an Effort to Improve Character profile Pancasila students.

3.2. Design

This stage is carried out by creating an interactive media design based on Quizizz Paper Mode Science Education which is designed using the Quizizz application by entering questions that have been validated. The steps in creating Quizizz Paper Science Education Mode include preparing learning objectives in terms of material and questions, then the stage of creating a design visualization plan, cover display, account creation, format selection and initial design. Quizizz Paper Mode Science Education is as follows:

- a. Download the Quizizz application on your cellphone and log in with your account (teacher).
- b. Quizizz account login
- c. Select a quiz with multiple choice questions (4 answer choices), then select start now, then select paper mode.
- d. Print the QR cards and distribute them to students. These answer sheets can be reused for each quiz. The QR sheets can be laminated for durability.
- e. You can assign QR cards to students by creating a new paper mode group or selecting one of the pre-created groups.
- f. Start or host a quiz on your computer/laptop. Questions can be displayed on a projector screen. (Make sure the Quizizz account on your computer/laptop is the same as the account on the mobile app).

- g. Scan the student's answers through the Quizizz application on the cellphone. Continue the steps until the question is finished.
- h. If the questions are finished, see the quizziz report on the report menu. (Teachers can download the report).

3.3. Development

The development stage at the ADDIE stage carries out validation tests. In this study, validation was carried out by material experts and media experts. Each validator can fill out a questionnaire provided by the researcher to see the quality of the product that has been developed and the validator can provide suggestions for improvement. Product validation aims to see the validity of the Quizizz Paper Mode Science Education that has been developed. The results of the validation of media experts and material experts are as follows:

3.3.1. Media Expert Validation

Media validation aims to measure the validity of the media or design used in the quizizz paper mode media. The following are the results of the media expert validation data:

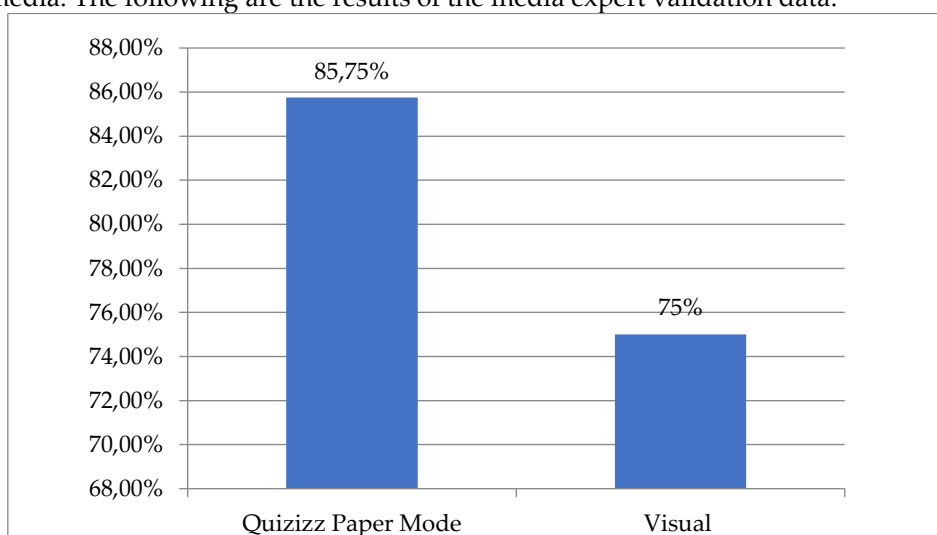


Figure 2. Media Validation Diagram

Based on the table above, the results of the media expert's validity show that the interactive media developed is included in the valid category. This category is seen from the average score of 85% and 75% with the valid category. Based on the assessment by the media expert validation, it shows that the media innovation developed can be declared valid to proceed to the next stage.

3.3.2. Validation of material experts

The validation of material experts aims to test the completeness of the material before the field test. The following are the results of the material validation data.

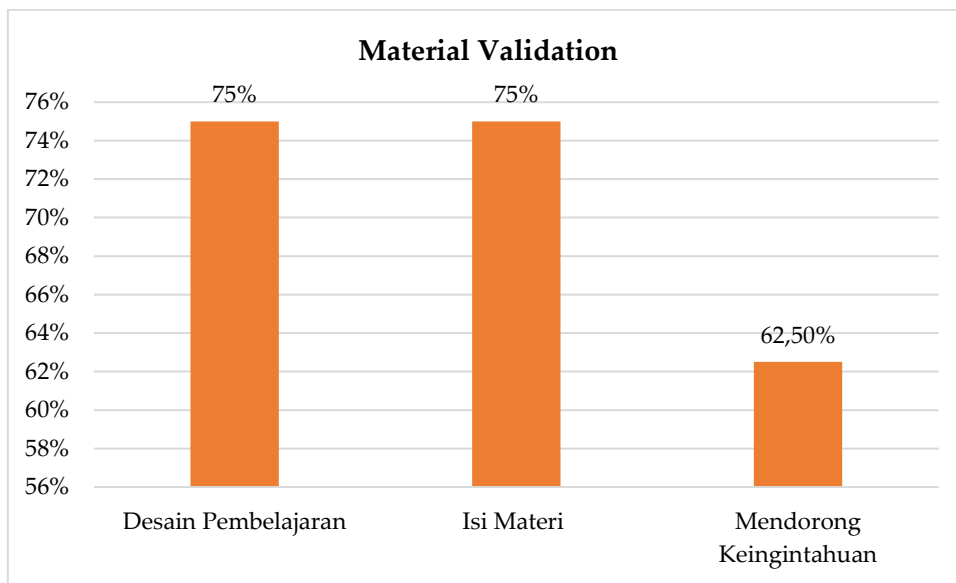


Figure 3. Validation by Material Experts

Based on the table above, the results of the material expert's validity show that the interactive media developed is included in the feasible category. This category is evident from the average score on the learning design aspect of 75%, the material content aspect of 75%, and curiosity of 62.50% with each aspect category being feasible. Based on the assessment by expert validation, it shows that the interactive science education media that supports strengthening the profile of Pancasila students that is developed can be stated Valid tested with several revisions.

3.4. Implementation

This stage is the field trial stage, namely by introducing the media to teachers to test its suitability and to students to find out the response to the learning media that has been created.

3.4.1. Teacher suitability test at SMAN 2 Bireun.

Media quality assessment by teachers at SMAN 2 Bireun. The results of the trial assessment of the feasibility of teachers can be seen in the following figure:

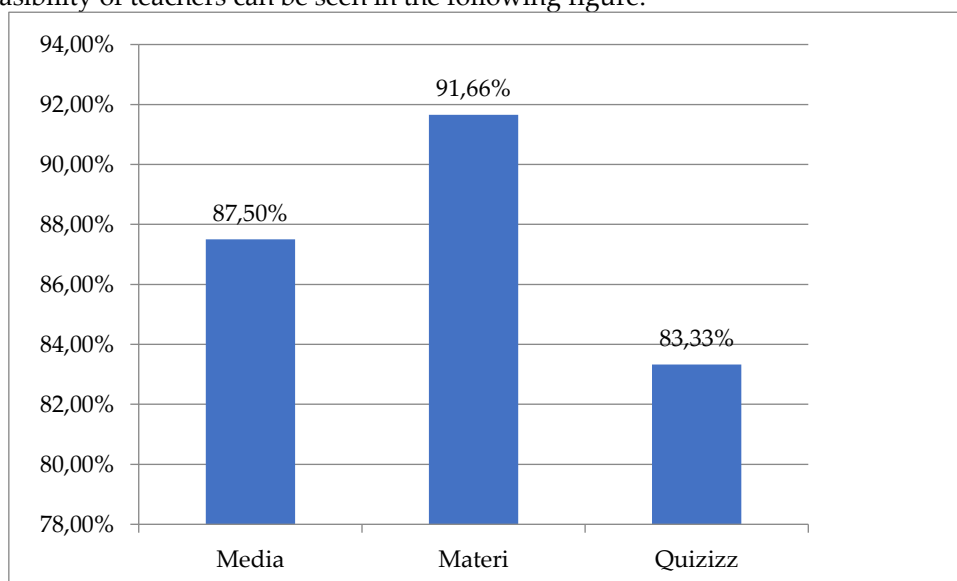


Figure 4. Diagram of teacher suitability test at SMAN 2 Bireun

Based on the picture above, the results of the teacher assessment at SMAN 2 Bireun obtained a percentage of each aspect, namely 87.50 %, 91.66% and 83.33% with the categories very feasible and feasible. Based on the results of the study, it shows that the interactive media quizizz paper mode is very feasible to be used as a science education effort to strengthen student character in the Pancasila student profile.

3.4.2. Student Response Results

The results of the assessment of student responses to interactive media created by students of SMAN 2 Bireun can be seen in the following image:

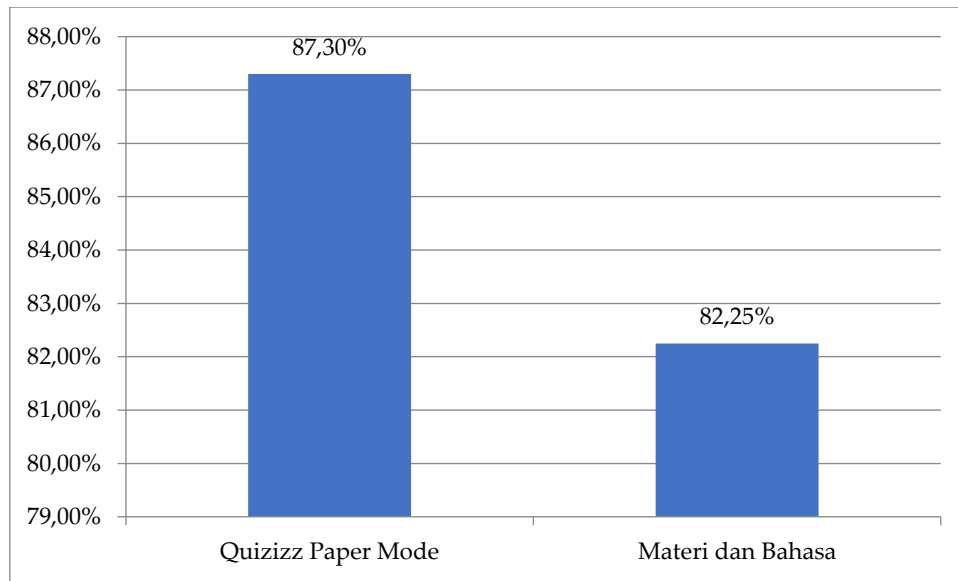


Figure 5. Student Response Results Diagram

The results of the student response trial on interactive science education media show that the media developed is included in the interesting category to use. This category is evident from the assessment results of 2 aspects. The media aspect is 87.30% in the interesting category. The material and language aspects are 82.25 % in the interesting category. This indicator shows that the Quizizz paper mode media used is easy for students to understand.

3.4.3. N-Gain test results

The results of the N-Gain test of the question instrument given to students showed the following N-Gain test results:

Table 7. Test Results N-Gain

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
GAIN_SCORE	30	.25	1.00	.7624	.23091
GAIN_PERCENT	30	25.00	100.00	76.2407	23.09084
Valid N (listwise)	30				

N-Gain test in the table above, the average value of the N-Gain score found a result of 0.762. This value is greater than 0.7, so the category obtained is high and can be interpreted as high effectiveness. For N-Gain percent, the average value obtained is 76.2407. This value is greater than 76.00. So it can be concluded that the questions given to students can improve the character profile of Pancasila students.

4. Conclusions

Based on the results of research and development of innovative web-based science learning media for grade X science material as well as data analysis and discussion, the following conclusions can be drawn:

- a. The Interactive Media Quizizz Paper Science Education Mode obtained validity from media experts of 85% with the category "Valid", and material experts 75% with the category "Valid".
- b. The results of the feasibility test that was carried out with teachers at SMAN 2 Bireun obtained 87.50% in the feasible category.
- c. The results of the student response assessment at SMA N 2 Bireun obtained 87.30% in the interesting category.
- d. For N-Gain, the average value obtained is 76.2407. This value is greater than 76.00. So it can be concluded that the questions given to students through quizizz paper mode can improve the character of Pancasila profile students.
- e. The design of the quizizz paper mode media and the questions chosen are very interesting in science education which aims to strengthen students' character in the Pancasila student profile program.

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