

## The Validity of Integrated Islamic Online Biology Quiz Using Quizizz Application on Plantae Subject

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### ABSTRACT

*Islamic values integrated Biology online quiz is a media developed through the quizizz online application as a supporting medium for learning biology which aims to provide integrated Islamic plantae material tests. The purposes of this study were to determine the validity of Islamic integrated biology online quizzes according to material experts and learning media experts. The objectives to be achieved are as follows: 1) describe the results of the validation of the Islamic values online integrated biology quiz using the quiz application on the Plantae material, 2) describe the results of the validation of the Islamic integrated biology online quiz using the quiz application on the plantae material according to media experts. This type of research is development research using a 4-D development model. The research instrument used is in the form of validation questionnaires for expert material and learning media. Data analysis techniques in the form of validation of questionnaire results y expert material and learning media. The results showed that online quizzes using Islamic integrated quiz applications had a validity percentage of 80% and learning media of 75%. This shows that Islamic integrated online quizzes can be used as a measure of valid Islamic integrated plantae material and can be used as learning suggestions.*

**Keywords:** 4D models; Islamic Values Integrated Biology; Plantae; Quizzes.

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### INTRODUCTION

The implementation of evaluation in learning relates to the assessment process of students' outcomes. Assessment is the process of collecting information, then processing that information to measure students' learning achievements. Learning activities are guided by the curriculum, which is one of the tools to achieve learning objectives (Santika et al., 2022). The achievement of learning objectives can be measured using evaluation instruments. Evaluation instruments are tools to measure the extent to which students master what has been learned (Riadi, 2017). In the era of globalization, there is a development of technology and knowledge. Strategies through the internet, especially social media, can enhance children's interest in educational learning through games. With the presence of social media in today's era, where all children have gadgets, games can be an attraction for children to become more enthusiastic about learning while playing games (Puspitarini, et al., 2016).

Games are a form of play that serve various purposes for children. These include helping children understand following instructions, problem-solving, honing skills, and fostering communication between teachers and students (Widianti & Sholihah, 2022). Educational games have become a medium that can be used for research in delivering subject matter. Educational games can be used in Class X of MAN 9 Jombang as an educational tool. Based on the pattern of educational games, a Likert scale using several question items can be employed. Players are required to learn and respond to the educational game, allowing assessment of their understanding. Actively guiding players in playing the educational game helps them answer questions and develop strategies. This process leads to obtaining a score, improving student comprehension. In this context, an online quiz game called Quizizz is utilized as a teaching tool (Anggraeni & Nurjanah, 2020).

Biology education is related to Islamic religious education; it can be said that biology education from an Islamic perspective is an inseparable part of religious education (Amri et al., 2017). The

understanding of the concept of Plantae studied by 10th-grade students is explained in the Quran in Surah Az-Zumar, verse 21, which means:

*"Do you not see that Allah sends down rain from the sky, then makes it flow into springs in the earth? Then He produces crops of varying colors; then they wither and you see them turn yellow; then He makes them [scattered] debris. Surely, in this, there is a lesson for those who possess understanding" (QS: 039: 21)*

In another verse of the Quran, it is also explained about how moss plants (Bryophyta), fern plants (Pteridophyta), and seed-bearing plants (spermatophyta) reproduce with the help of water and wind. This is described in Surah Al-An'am:95, and Surah Al-Hijr:22.

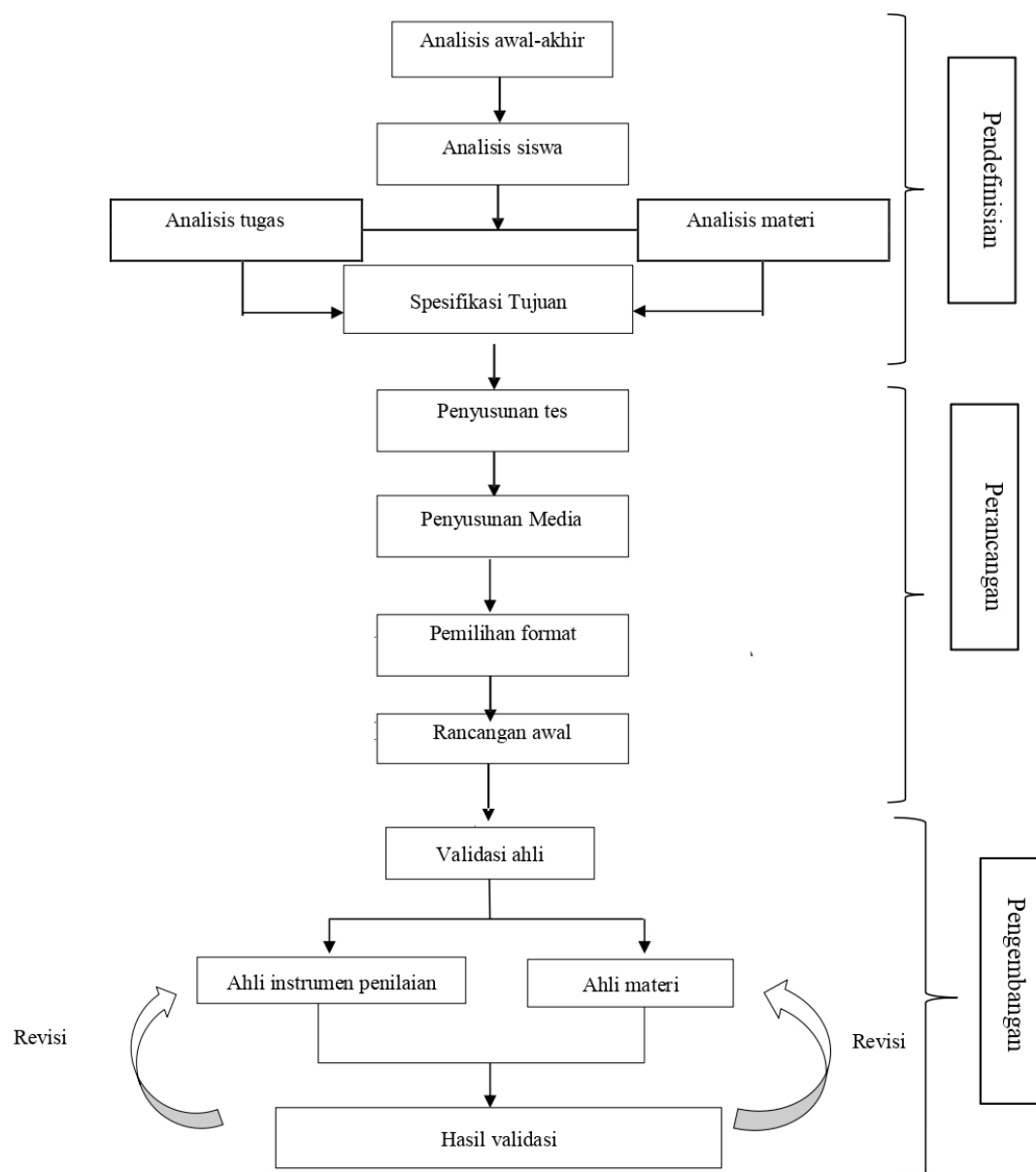
*"Surely, Allah causes the grain and the seed to sprout. He brings forth the living from the dead, and He is the one who brings forth the dead from the living. That is Allah; so how are you deluded away from the truth?" (Quran, Surah Al-An'am:95). "And We send the winds fertilizing [to cause pollination], then We send down water from the sky, and We give you drink from it. And you are not its retainers." (Quran, Surah Al-Hijr:22)*

Understanding the concept of Biology integrated with Islamic values is expected to foster students' awareness in cultivating a positive attitude towards Biology while recognizing the orderliness and magnificence of the One Almighty God (Rohman et al., 2016). The teaching system at MAN 9 Jombang is quite commendable, with teachers and students occasionally utilizing media such as laptops and projectors for teaching. However, this approach sometimes results in students becoming disinterested in the subject matter due to its lack of engagement. In this context, uninteresting lessons and passive watching tend to bore students and lead to quick forgetfulness. Therefore, there is a need for an Online Biology Quiz Integrated with Islamic Values Using the Quizizz Application on the Plantae Topic.

## **METHOD**

In this research, the 4D development model was used. The 4D development model consists of four main stages: Define, Design, Develop, and Disseminate (Ataji et al., 2021). This model was chosen with the aim of producing an online quiz product using the Quizizz application. Muliando & Dian (2021) state that developmental research aims to create specific products that are then tested for their effectiveness, making them ready for real-world implementation.

The product generated in this study is an online quiz using the Quizizz application for the Plantae topic. The development procedure involves creating an online quiz using the Quizizz application for both Science (IPA) and Religious Education (Agama) subjects, using the 4-D development model. The research design used is the 4-D development model, which comprises four stages: 1) Define, 2) Design, 3) Develop, but without 4) Disseminate due to time and cost limitations. The development model's design can be seen in **Figure 1**.



**Figure 1.** 4D Development Flowchart  
(Adapted from Hapsari & Sholihah, 2021)

- **Define**

The definition phase aims to determine and define the needs in the learning process by gathering various information related to the product to be developed. This stage is divided into several steps, including:

- **Initial-End Analysis**

Initial-End Analysis is used to identify the fundamental issues in the development of the Quizizz media. In this stage, facts and alternatives are presented as solutions.

- **Student Analysis**

Student analysis is conducted to understand the characteristics of the students.

- **Task Analysis**

Task analysis is aimed at identifying the main tasks that participants will undertake.

- **Material Analysis**

Material analysis aims to determine the content of the material within the developed Quizizz media.

- **Learning Objective Specification**

Learning objective analysis is conducted to determine the indicators of learning achievement based on material analysis and curriculum analysis.

- **Design**

The design phase aims to create a design for the Quizizz media that can be used in Biology education integrated with religious values. This design phase includes:

- **Test Development**

Test development is based on learning objectives and is transformed into instruments that serve as benchmarks for assessing students' abilities, resulting in a product.

- **Media Selection**

Media selection aims to identify relevant learning media based on the characteristics of the material and the needs of the students.

- **Format Selection**

Format selection is carried out to ensure that the chosen format aligns with the learning material. The choice of presentation format is adapted to the learning media being used. Format selection in development involves designing the learning content, choosing the approach and learning resources, and organizing and designing the Quizizz content.

- **Initial Design**

The initial design is the quizizz media design that has been created by the researcher and then received input from the supervising instructor. The input from the supervising instructor will be used to improve the quizizz media before production is conducted.

- **Disseminate**

This development phase aims to produce the revised online media based on expert feedback. The expert validation is intended to validate the content of the science material within the quizizz media before conducting trials, and the validation results will be used to revise the initial product. The compiled quizizz media will then be assessed by subject matter experts and media experts to determine its suitability for implementation. The validation outcomes will serve as feedback for the enhancement of the developed quizizz media. After the initial draft (Draft I) has been validated and revised, Draft II will be generated. Subsequently, Draft II will be tested with students in a limited field trial. The product validation comprises both subject matter expert validation and media expert validation. The validation is conducted by instructors who are recognized in their respective fields of expertise. The validators provide assessments of the online quizizz-based learning media on prepared evaluation sheets.

- **Research Instruments**

This instrument is used to obtain data regarding the experts' assessment of the developed quizizz media. The assessment results serve as a basis for refining the product before conducting trials. The quizizz media validation sheet is completed by the Biology Education lecturer as the subject matter expert and the Physics Education lecturer as the instructional media expert. The quizizz media validation sheet consists of an assessment form for the validity of the quizizz media's suitability, which is structured using a Likert scale. The development of this validity sheet is based on the assessment instrument guidelines for online media by subject matter experts and instructional media experts, as presented in **Table 1** and **Table 2**.

**Table 1.** Assessment Instrument Guidelines for Content Evaluation.

No	Indicator	Number of Items
1	Relevance of content to basic competencies	1
2	Relevance of content to indicators	1
3	Encouragement of learning motivation	1
4	Actualization of presented content	1
5	Adequacy of vocabulary quantity	1
6	Appropriate vocabulary difficulty level to the content	1
7	Clarity of learning comprehensibility	1
8	Vocabulary language that is easily understood	1
9	Accuracy of vocabulary usage	1
	Total Score	
	Average Score	
	Percentage	

**Table 2.** Assessment Instrument Guidelines for Media Evaluation

No	Indicator	Number of Items
1	Appropriateness of background/layout selection	2
2	Text color accuracy	3
3	Suitability of images to questions	2
4	Audio suitability	2
5	Packaging	2
6	Utilization	2
	Total Score	
	Average Score	
	Percentage	

- **Data Analysis Technique**

The data analysis technique consists of analyzing the validation results from subject matter experts, evaluation experts, practitioners, as well as student responses regarding the practicality of the product. The techniques employed include percentage calculation and qualitative descriptive analysis. The questionnaire used in this research is in the form of a checklist with score assessment for each aspect using a Likert scale ranging from 1 to 5.

**Table 3.** Validation Score Criteria

Explanation	Score
Very Good	4
Good	3
Not Good	2
Very Not Good	1

The obtained data is then processed using validation formulas referenced from Ataji (2021).

$$Ev = \frac{Tas}{Tes} \times 100\%$$

Explanation:

Ev : Expert validation

Tas : Total achievable score

Tes : Total expected score. There are criteria for the level of validation of the assessment instrument product presented in the table below.

**Table 4.** Criteria for the Level of Validity

Percentage Score	Category
81%-100%	Highly Valid
61%-80%	Valid
41%-60%	Less Valid
20%-40%	Not Valid

(Source: Ataji et al., 2021)

## RESULT AND DISCUSSION

### 1. Result

This research is conducted with the aim of creating an online quiz using the quizizz media. The development is carried out using the 4-D model (Four-D Models). The development process follows the define, design, and develop stages of the 4-D model. The validation results of the integrated Islamic online quiz media using the quizizz application for the plantae subject are as follows:

#### a. Validation Results from the Subject Matter Expert

The validation was carried out by the subject matter expert validator, conducted by the Biology lecturer from the Faculty of Education. The content validation was also conducted by Mrs. Ospa Pea Yuanita Meishanti, M.Pd from KH. A. Wahab Hasbullah University. The researcher employed a validation questionnaire for the content validation. The results of the material validation can be observed in **Table 4**.

**Table 4.** Material Validation Questionnaire

No	Assessment Elements	X	$\sum X$	$\bar{X}$ (%)	Desc
1	Relevance of content to basic competencies	4	4	100	HV
2	Relevance of content to indicators	1	4	25	NV
3	Encouragement of learning motivation	4	4	100	HV
4	Actualization of presented content	4	4	100	HV
5	Adequacy of vocabulary quantity	3	4	75	V
6	Appropriate vocabulary difficulty level to the content	3	4	75	V
7	Clarity of learning comprehensibility	3	4	75	V
8	Vocabulary language that is easily understood	3	4	75	V
9	Accuracy of vocabulary usage	4	4	100	HV
	Total Score			72,5	
	Average Score			80,5	

Explanation:

HV : Highly Valid

V : Valid

LV : Less Valid

NV : Not Valid

Based on Table 4, the average results of the learning material validation by the subject matter expert validator show that there are four assessment elements categorized as "Highly Valid" with a percentage value of 100%. Meanwhile, in the "Valid" category, there are assessment elements from element 5 to 8 with a percentage value of 75%. The second assessment element that received the lowest score is only 25%, which is due to the absence of material indicators presented in the online quiz. The overall average percentage for the material is 80.5%, considering aspects of content, structure, and language.

#### b. Learning Media Validation Results

In this study, the researcher employed the quizizz media as a supporting tool to create online quizzes. The media expert validator is Mrs. Khoirun Nisa, M.Pd, who is an Islamic Education lecturer. The media validation conducted by the researcher utilized a questionnaire to assess the media. The results of the media validation can be observed in **Table 5**.

**Table 5. Media Expert Validation Questionnaire**

No	Unsur Penilaian	X	$\sum X$	$\bar{X}$ (%)	Desc
1	Appropriateness of background selection	3	4	75%	V
2	Layout proportion accuracy	3	4	75%	V
3	Font selection accuracy	3	4	75%	V
4	Letter size accuracy	3	4	75%	V
5	Text color accuracy	3	4	75%	V
6	Suitability of images to questions	3	4	75%	V
7	Image size	3	4	75%	V
8	Audio accuracy	3	4	75%	V
9	Sound effect accuracy with buttons	3	4	75%	V
10	Questions presented attractively	3	4	75%	V
11	Consistency of appearance with content	3	4	75%	V
12	Suitability with users	3	4	75%	V
13	Flexibility (data used independently and guided)	3	4	75%	V
	Total Score			97,5	
	Average Score			75	
	Percentage			75%	

Explanation:

HV : Highly Valid

V : Valid

LV : Less Valid

NV : Not Valid

The media validation results in Table 5 indicate an average percentage of 75%. Based on the validity criteria according to Kurnia et al., (2022), when the percentage score falls below the range of 80%-100%, it is considered valid. Therefore, the validation instrument for the integrated Islamic online quiz in the biology subject "plantae" using quizizz is deemed valid. Meanwhile, according to the study by Rachmawati & Kurniawati, (2020), if the validation elements of the developed integrated Islamic online quiz meet the effectiveness aspect, with a validation result by media experts falling within the valid criteria with an average of 75%, the media is considered suitable for further development.

## 2. Discussion

In this section, we present the research findings concerning the developed instructional media. The developed media is an online quiz created using the quizizz application, and it has been designed based on the needs of both teachers and students at MAN 10 Jombang. The research output to be discussed further includes: 1) Describing the validation results of the integrated Islamic online biology quiz using the quizizz application on the "plantae" subject, and 2) Describing the validation results of the integrated Islamic online biology quiz using the quizizz application on the "plantae" subject according to media experts.

### a. Validation Results of the Online Quiz According to the Subject Matter Validator

The validation process for the online quiz using the quizizz media follows the 4-D development model, with validation analysis steps that calculate the average ratings given by validators for each assessment element. According to Mardhatilla (2021), the calculation of the total average score is used for comparison against assessment criteria. Based on the observation results of the validation process and the theory mentioned above, the developed integrated Islamic online biology quiz on the "plantae" subject demonstrates an average score of 80.5, which falls within the "highly valid" category. All aspects of the material assessment instrument are highly valid and valid, indicating that the developed "plantae" material can be used. However, further revisions and improvements are needed based on the suggestions and feedback from the subject matter expert validator. The provided suggestions and feedback include improving the wording of the usage guide and addressing the absence of indicators covering certain assessment elements. Referring to Kurnia et al., (2022) regarding the suitability criteria with a range of values between 80.00% - 100% in the "highly valid" category, the online quiz instrument based on quizizz for the integrated Islamic subject matter is declared to be highly valid.



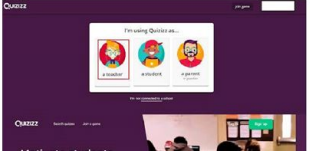

**b. Validation Results of the Online Quiz According to the Media Validator**

The validation results of the online quiz by the media validator, based on percentage calculations across 7 aspects, show a valid category when matched with suitability criteria. Therefore, after analysis, the average percentage validation of the media indicates a "suitable" category with the label "valid" (Rohman et al., 2016). This corresponds with the score obtained, which is 3, along with suggestions and feedback indicating that improvements are needed in the appearance or media aspect. Specifically, enhancements to the home page, such as adding icons or symbols, are recommended to make the learning media more engaging.

**c. Revision Results**

The results of the product revisions can be seen in **Table 6**.

**Table 6. Results of the Revisions for the Integrated Islamic "Plantae" Learning Material**

No	Before Revision	After Revision
1		
2	<p>2. Penilaian cukup dengan memberikan tand: sebaris dengan pernyataan yang diberikan. sebagai berikut:</p> <p><b>4 : Sangat Baik</b></p> <p><b>3 : Baik</b></p> <p><b>2 : Kurang Baik</b></p> <p><b>1 : Tidak Baik</b></p>	<p>2. Penilaian cukup dengan memberikan tanda : sebaris dengan pernyataan yang diberikan. M sebagai berikut:</p> <p><b>4 : Sangat Valid</b></p> <p><b>3 : Valid</b></p> <p><b>2 : Kurang Valid</b></p> <p><b>1 : Tidak Valid</b></p>
3	<p>Penyusunan dari Aplikasi Quizizz :</p> <p><b>Langkah 1</b>                  Masuk ke situs <a href="https://quizizz.com">https://quizizz.com</a></p> <p><b>Langkah 2</b>                  Klik sign up/create akun</p> <p>Kita bisa sign up bisa menggunakan akun google, atau dengan memasukkan email kita selain itu ju dapat membuat akun dengan nomor telfon</p> <p><b>Langkah 3</b>                  Setelah berhasil sign up, silahkan klik e teacher. Perhatikan gambar berikut!</p> 	



## CONCLUSION

The conclusion drawn from the validation results of the integrated Islamic online quiz research is that it meets the valid criteria for both material and media validation. Based on the calculated average score of 80.5 for the material, it aligns with the predefined criteria and falls within the "highly valid" category. Meanwhile, the media validation indicates a percentage of 75%, which categorizes it as "valid".

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