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FEASIBILITY OF UNITY-BASED DIGITAL GAMIFICATION ASSESSMENT MEDIA FOR GRADE VIII STUDENTS' SPEECH TEXT READING SKILLS

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Abstract: The purpose of this study is to determine the feasibility of digital gamification assessment media that has been developed as one of the necessary stages in the 4D development model. Digital gamification assessment media is designed to overcome the problems found in schools, namely the use of conventional assessment methods that are less efficient and unable to provide direct feedback to students. In addition, students' low interest in reading has encouraged the need for more interactive and interesting assessment media innovation. The assessment media was developed by adopting gamification strategies that aim to increase students' enthusiasm in the assessment process. The development model used in this study is a 4D model. Research data related to media feasibility were analyzed using quantitative and qualitative methods. The quantitative method uses numbers and percentages, while the qualitative method consists of suggestions, criticisms, and revisions from experts. Data was collected through a validation questionnaire using the Likert scale and analyzed quantitatively. The results showed that the developed media obtained a validation score of 96.6% from media experts, 97.5% from linguists, and 100% from subject matter experts, all of which were categorized as very feasible. This media is able to integrate gamification elements such as scores, levels, and direct feedback, thereby increasing student motivation and engagement. Therefore, Unity-based digital assessment media with gamification strategies is feasible to be used as an innovative alternative in learning assessment.

Keywords: assessment media; Unity; gamification; speech text reading; 4D model

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INTRODUCTION

Education in Indonesia is developing in line with the demands of the times and technological advancements. These changes are marked by the implementation of the Independent Curriculum which emphasizes strengthening competencies and developing the character of students as a whole. This curriculum encourages the creation of a learning process by focusing on students (*student-centered learning*) and provides space for teachers and students

to innovate in learning (Ramadani et al. 2025). In this way, students can be more active, creative, and able to think critically when learning and applying the knowledge gained.

Along with the development of technology and the implementation of the Independent Curriculum, the way of conducting assessments has also changed towards a more modern and digital-based system. Teachers no longer only rely on manual observation, but are required to be able to utilize technology as a tool for evaluating learning that is more objective and efficient. This is in line with the opinion (Joseph 2025) which explains that the application of digital assessments is able to increase the efficiency, transparency, and accuracy of evaluation results.

However, based on the results of interviews with Indonesian language teachers at SMP Negeri 1 Labang, the process of assessing speech text reading skills is still carried out manually using rubrics and observation sheets. The process is considered less efficient because it takes a long time and has the potential to cause inconsistencies in assessment. In addition, conventional assessments have not been able to provide direct feedback to students, so they do not support optimal ability improvement.

Another problem found is the low interest in reading among students. Reading activities are often considered monotonous and less interesting, resulting in low reading skills, especially in reading speech texts. Based on data from *the Programme for International Student Assessment* (PISA), the reading literacy level of Indonesian students is still relatively low despite an increase in 2022 (Ministry of Education and Culture, 2023). This condition shows the need for learning innovations that are able to increase student motivation and engagement. According to Nadia Rahma et al. (2023), the use of interactive digital media can help increase students' interest in reading because learning becomes more interesting and not monotonous.

One approach that can be applied is gamification, which is the application of game elements such as points, levels, challenges, and rewards in the learning process (Ariani 2020). Gamification has been proven to increase student motivation, engagement, and learning experience. Fitri Yanti et al. (2023) also showed that the application of gamification in digital learning was able to increase student participation and enthusiasm during the learning process because it provided a more interactive and fun learning atmosphere. In addition, gamification also allows for instant feedback so that students can find out their learning progress directly (Ananda, Rahmah, and Ramdhani 2024).

The development of gamification-based assessment media can be supported by the use of the platform *Unity*. *Unity* is a software that allows the development of 2D and 3D-based interactive applications with the integration of various multimedia elements such as text, images, audio, and animation. According to Alvendri & Effendi (2024), *Unity* can be used in the development of learning media because it has a flexible interface, cross-platform support (*Windows, Android, iOS*), as well as the ability to combine multimedia elements such as text, images, sound, and animations. In addition, Rina Oktavia (2024) explained that learning

media based on *Unity* is able to improve the interactivity and learning experience of students through engaging multimedia integration.

Based on these problems, it is necessary to develop a Unity-based digital gamification assessment media with a gamification strategy for speech text reading skills with a 4D model. This model is one of the models of learning media development developed by S. Thiagarajan, Dorothy S. Semmel, and Melvyn I. Semmel (1974:5). The 4D development model is composed of four important stages, including: *Definition*, *Design*, *Development*, and *Disseminate*. The purpose of this study is to determine the feasibility of digital gamification assessment media developed as one of the stages in the 4D development model. The results of this research are expected to be a reference for similar research in the future.

METHOD

This research is a development research that focuses on assessing the feasibility of Unity-based digital gamification assessment media with gamification strategies on the speech text reading skills of grade VIII students. Feasibility assessments are carried out through validation by experts including material experts, media experts, and linguists. According to Sugiyono (2019), development research is used to produce certain products as well as test the feasibility of the product. Data collection was carried out using questionnaire and interview techniques. The research instrument is in the form of a validation questionnaire prepared using the Likert scale to obtain quantitative data in the form of a percentage of the eligibility level, as well as qualitative data in the form of suggestions, criticisms, and inputs from experts as a basis for product improvement. Data analysis techniques are carried out quantitatively and qualitatively. Quantitative analysis is used to calculate the percentage of media feasibility level based on the results of expert assessments, while qualitative analysis is used to describe inputs and revisions to the developed media.

Table 1. Likert Scale

Rating	Score
Excellent (SB)	4
Good (B)	3
Less (K)	2
Very Insufficient (SK)	1

Source : Adaptation of Soleka et al., (2022)

Expert validation questionnaires are used to obtain an assessment of the developed product. The validators were given an instrument in the form of a questionnaire to assess the material, media, and design aspects of the Unity-based digital gamification assessment media with gamification strategies. The validation results are used as a basis for determining the feasibility of the product. If the product is declared unsuitable, it will be revised according to the advice and input from experts. The criteria for assessing media eligibility are determined based on the categories that have been set in the research instrument.

The questionnaire data analysis technique obtained from the validation results of material experts as well as media and design experts was carried out using the following formula.

$$\text{Nilai Validasi} = \frac{\text{skor yang diperoleh}}{\text{jumlah skor tertinggi}} \text{ x } 100\%$$

Figure 1. Validation questionnaire formula (Source : Adaptation of Soleka et al., 2022)

Based on the results of the data analysis obtained, it can be determined the feasibility of Unity-based digital gamification assessment media products with gamification strategies. The eligibility categories of the developed products are determined based on the criteria that have been set and presented in **table 2**.

Table 2. Product Eligibility Categories

Percentage	Criteria
81% - 100%	Highly feasible
61% - 80%	Worthy
41% - 60%	Quite feasible
21% - 40%	Less worthy
0% - 20%	Not eligible

Source : Adaptation of Soleka et al., (2022)

The percentage result will determine the level of validity of the developed media. The development product is declared theoretically feasible if the percentage of assessment is ≥ 61%.

RESULT AND DISCUSSION

The results of this development research are in the form of Unity-based digital gamification assessment media with gamification strategies on speech text reading materials for grade VIII students developed using a 4D model. The resulting products are then validated by media experts, linguists, and material experts to determine the level of media eligibility. In this section, the results of data analysis and responses from validators to the products that have been developed are presented.

Media Expert Validation

This validation stage is carried out to verify that the developed media design is suitable for use as a learning medium. Media validation was carried out on March 6, 2026 by Mr. Arief Setyawan, S.Pd., M.Pd. Media expert validators have competence in the field of educational technology or digital learning media development, have a minimum of Bachelor's (S1) or

Master's (S2) education, and are experienced in designing and developing digital-based learning media or interactive applications. The selection of validators based on this expertise is important so that the validation results have a high level of accuracy and credibility in assessing product quality (Sugiyono, 2019).

The media developed has several advantages in terms of appearance and learning design. This media is designed with an interactive display that combines simple visual, audio, and navigation elements to make it easier for students to operate the application. This is in line with the research of Jihan Oktrio et al. (2025) which states that Unity-based learning media is able to increase student interaction through interactive multimedia integration. In addition, the application of gamification elements such as scores, levels, and direct feedback is able to create a more interesting and non-monotonous learning atmosphere. The use of *Unity* also allows the media to run responsively with a more modern and interactive appearance than conventional assessment media. These advantages are in line with research conducted by Asa Yuaziva (2025) who stated that Unity-based media is able to create an interactive, interesting, and effective learning experience through the integration of visual, audio, animation, and multimedia elements in real-time.

The developed products are validated by media and design experts. Based on the validation results obtained from media and design experts, it can be seen that the percentage of media and design validation results is **96.6%** in the **Very Feasible**. The results of the validation show that the product developed is feasible and ready to be used as a learning medium. This is in line with previous research which stated that media with media expert validation and design results qualifications in the excellent category have high potential to be applied in the learning process (Hidayat, Nugraha, and Ali 2024). This percentage value is adjusted to the eligibility table so that it is at a very good qualification level. The recapitulation of the results of validation by media experts is presented on **Table 3.**

Table 3. Recapitulation of Media Expert Validation Results

Aspects	Question Indicator	Value	
		Score obtained	Expected score
Language Aspects	Terms and texts in using language in accordance with the rules of the Indonesian language.	4	4
	The language used is easy to understand	4	4
Aspects in Learning	Encourage curiosity	4	4
	Support independent learning	4	4
	Able to motivate students in learning	4	4
Technical Aspects	Creativity and innovation in product design developed	4	4
	Button functionality	4	4

Aspects	Question Indicator	Value	
		Score obtained	Expected score
Display and Audio Aspects	Easy to operate	4	4
	Compatibility of the app's appearance with the theme	3	4
	Appropriate typeface and size	4	4
	Consistent asset layout	4	4
	Image display compatibility	3	4
	Proportional size of titles, images, icons, logos, etc.	4	4
	Design attractiveness	4	4
	Audio in the media is clear	4	4
	Quantity	**58**	**60**
	Percentage	**96.6% (Very Feasible)**	

Based on the results of the validation, the developed media obtained a validity value of **96.6%** with a **very feasible category**. In the validation process, media experts provided several comments with suggested revisions in several sections including the addition of an abbreviation in the title *of the Oration* to *a General Oration*, the addition of confirmation options to the outgoing notification in the form of "Yes" and "No" buttons, and changes in the placement of the user instructions menu with the developer profile menu to be more systematic. In addition, the validator also suggested adding supporting visual elements to the title section related to the speech theme, adding *a mute sound* feature to adjust the voice in the application, and adjusting the logo appearance by adding a background that matches the color to make the media look more attractive.

The media revision was carried out based on the validation results from media experts obtained through the assessment questionnaire, and supported by the comments and suggestions for improvement provided. Some of the revised aspects include replacing the application icon to make it more representative, adding a caption to the title of the Oration to make it clear that the term refers to a general oration, and improving the notification feature by adding "yes" and "no" options. In addition, icon positions were rearranged, such as swapping the location of the user guide icon for the developer profile icon, as well as adjusting the logo background color to better align with the icon design. Other improvements include the addition of a main menu icon to formative and summative assessment notifications, as well as the provision *of a mute sound* feature to improve user convenience. Comparison of media views before and after revision based on input from media experts is presented in **table 4**.

Table 4. Revision of Media Expert Validation Results

Before Revision	After Revision

Note: This logo icon does not depict the app as an app about speech text.

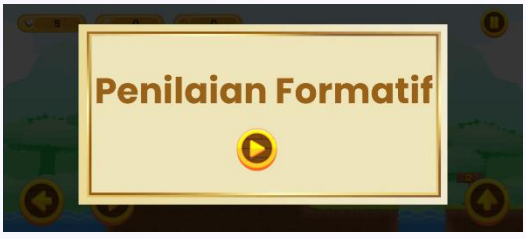
Remarks: The logo has undergone significant changes, namely the addition of a caption to the title "Oration" with the text "General Oration", so that it more clearly describes the context of the application.

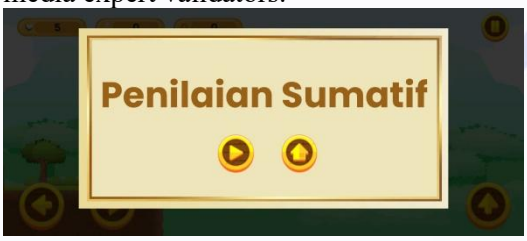
Note: this logo icon does not depict the app as an app about speech text, there is no voice mute and voice activation, swap the user guide icon for the developer profile icon, and the logo background is not aligned with the buttons.

Remarks: The logo icon on the app's display now better illustrates that the app is related to speech text. In addition, a feature has been added to enable and mute the sound (mute), which was previously absent and then swap the place of the user guide icon with the developer profile icon because students need more user instructions, In addition, the logo background is now adjusted to be more aligned.

Remarks: In the initial menu, the exit button directly exits the application.

Remarks: In the initial menu, an exit button has been added with notifications with "yes" and "no" options.



Remarks: In the formative assessment notification section, media experts suggest adding a main menu icon.	**Remarks:** In the formative assessment notification section, the main menu icon has been added according to the suggestions of media expert validators.
	
Remarks: In the summative assessment notification section, media experts suggest adding a main menu icon.	**Remarks:** In the summative assessment notification section, the main menu icon has been added according to the suggestions of media expert validators.

Linguist Validation

This validation stage is carried out to determine whether the use of language in the developed media is suitable for use as a learning medium. Language validation was carried out on March 6, 2026 by Mr. Dr. Maulid Taembo, S.Pd., M.A. The products developed were validated by linguists. Validators are selected based on competence in the field of linguistics or Indonesian language education, have a minimum academic qualification of Bachelor (S1) to Master (S2), and have a good understanding of linguistic rules in the context of learning. The selection of validators in accordance with their field of expertise is important to ensure the accuracy of assessments of linguistic aspects (Sugiyono, 2019). Based on the validation results obtained from linguists, it can be seen that the language validation percentage results are **97.5%** with a **very feasible** category.

From the linguistic aspect, the media developed has the advantage of using language that is communicative, straightforward, and easy to understand by grade VIII students. This is supported by research by Rakha Zhakarsya (2026) who states that the use of communicative and interactive language in learning is able to help students understand the material and increase their involvement in the learning process. The sentences used are adjusted to the level of intellectual development of students so that instructions and materials in the media can be understood clearly. In addition, the use of terms that are consistent and in accordance with the rules of the Indonesian language helps students understand the content of the material without causing ambiguity. This advantage is in line with research (Lestari et al. 2025) which explains that the use of effective and communicative language in digital learning media is able to increase students' understanding of the material presented.

The results of the validation show that the product developed is feasible and ready to be used as a learning medium. Therefore, the developed media does not require further revision; thus, the Unity-based digital gamification assessment media *Unity* with a gamification strategy

that is declared feasible and ready to be used as a learning medium (Iqbal 2026). This percentage value is adjusted to the eligibility table so that it is at a very good qualification level. The recapitulation of the results of validation by linguists is presented on **Table 5.**

Table 5. Recapitulation of Linguist Validation Results

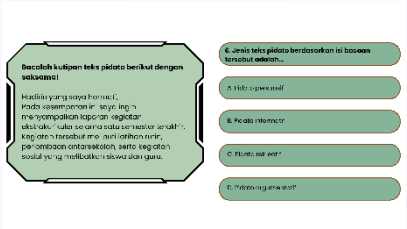
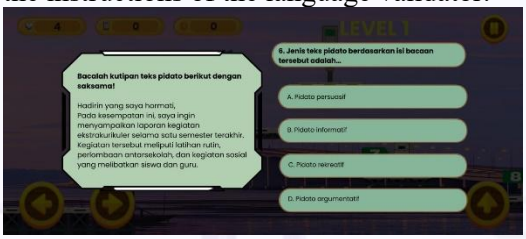
Aspects	Question Indicator	Value	
		Score obtained	Expected score
Aspects of Language Accuracy	Sentence structure is appropriate.	4	4
	The effectiveness of sentences used in the media	4	4
	Standardization of terms	4	4
Communicative Aspects	The language used makes it easier for students to understand information	4	4
Dialogical and Interactive Aspects	Motivate students	4	4
	Encourage critical thinking	4	4
Aspects of Intellectual Development	Suitable for the intellectual development of the students	4	4
Aspects of Language Rules	Grammar	3	4
	Use of spelling	4	4
Aspects of Using Terms, Symbols, and Icons	Consistent terms	4	4
Quantity		**39**	**40**
Product eligibility percentage		**97.5 % (Very Feasible)**	

Based on the results of the validation, the developed media obtained a validity value of **97.5%** with a **very feasible category**. In the validation process, linguists did not provide specific notes related to the content of the media, but suggested some improvements in the linguistic aspect. These improvements include the use of commas, the selection of the right conjunctions, and the placement of periods at the end of sentences to be in accordance with the rules of good and correct Indonesian language.

The linguistic revision was carried out based on the results of validation by linguists obtained through the assessment questionnaire, and supported by comments and suggestions for improvement to the developed media. The improvements are focused on several aspects, including improving the instructions for use where there are still *typos* and duplicating buttons with the same function. In addition, improvements were made to the use of punctuation, especially the placement of hyphens in learning objectives to be in accordance

with the rules of good and correct Indonesian language. The changes aim to improve the clarity of information and the quality of material in learning media. Comparison of media views before and after revision based on the results of the validation of subject matter experts is presented in **Table 6**.

Table 6. Revision of Linguist Validation Results

Before Revision	After Revision
	
Description: Removed the word "for" in the pause button, added a period in the upward button, and changed the word Play to play.	**Remarks:** The word "for" in the after function section of the pause button is removed to "for", adds the word "obstacle" and a period in the top button icon, and changes the word Play to play according to the instructions of the language validator.
	
Remarks: Added a comma after the word "On this occasion", as well as changing the "also" visit.	**Remarks:** Add a comma after the word "On this occasion", and change the conjunction "and" to "and" as directed by the language validator.

Subject Matter Expert Validation

This validation stage is carried out to determine the suitability of the content of the material in the developed media so that it is suitable for use as a learning medium. The material validation was carried out on January 24, 2026 by Mrs. Purwan Andri Wijayanti, S.Pd. The products developed were validated by material experts who have competence in the field of learning Indonesian. Validators are selected based on competence in the field of learning Indonesian, have a minimum academic qualification of Bachelor (S1), and master learning materials, especially the skill of reading class VIII speech texts. The selection of validators in accordance with their field of expertise aims to ensure the accuracy of the assessment of the suitability of the material content with learning objectives (Sugiyono, 2019).

The excellence of the material in this media lies in the suitability of the content of the material with the learning outcomes (CP) and learning objectives (TP) of the skill of reading the speech text of grade VIII. The material presented not only contains the basic concept of reading speech texts, but is also equipped with contextual examples and HOTS-based questions that are able to train students' critical thinking skills. According to Arrifatul Shabrina, Rosita Putri, and Achmad Khairi (2025), the selection of the right learning media is very important to increase the effectiveness of the learning process and help students understand the material more easily and interestingly. In addition, the formative and summative questions available are designed to measure reading ability more objectively through a digital assessment system. The presentation of material combined with gamification also makes students more motivated to complete each stage of learning. This is in line with research (Lathifah and Damayanti 2024) which states that learning materials that are in accordance with learning objectives and presented interactively can increase the effectiveness of the learning process of students.

Based on the validation results obtained from material experts, it can be seen that the result of the material validation percentage is **100%** in the **Very Feasible**. The results of the validation show that the product developed is feasible and ready to be used as a learning medium. This is in line with research (Koesnadi and Astuti 2024) which states that media with the qualification of the results of the validation results of material experts in the category of excellent has a high level of content suitability with the learning objectives so that it is effectively used in the learning process. This percentage value is adjusted to the eligibility table so that it is at a very good qualification level. The recapitulation of the validation results by the subject matter expert is presented on **Table 7.**

Table 7. Recapitulation of Material Expert Validation Results

Aspects	Question Indicator	Value	
		Score obtained	Expected score
Material Aspects	Suitability of materials and activities with CP and TP	4	4
	Breadth of material coverage	4	4
	Suitability of the material for the type of question	4	4
Aspects of Material and Concept Accuracy	Accurate concepts and definitions supported by sources	4	4
	The facts and data used are accurate	4	4
	The examples presented are accurate	4	4
	Images and illustrations support the theme	4	4
	The terms used are appropriate for the field	4	4
	Contextually used images and illustrations	4	4

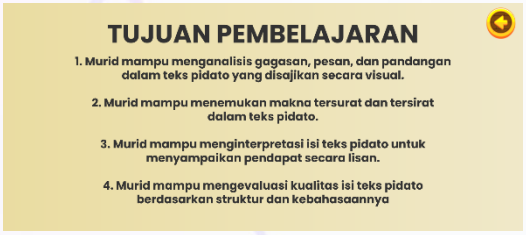
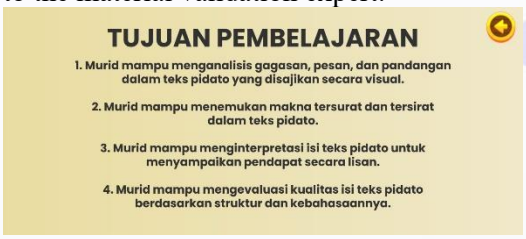
Aspects of Material Up-to-Date	The examples presented are related to everyday life	4	4
Aspects of Stimulating Curiosity	Encourage students' curiosity	4	4
Question Aspect	Questions include HOTS	4	4
	Questions according to the indicators and grids that have been prepared	4	4
	Formative and summative questions are able to measure speech text reading skills	4	4
Quantity		**56**	**56**
Product eligibility percentage		**100% (Very Feasible)**	

Based on the results of the validation, the developed media obtained a validity value of **100%** with a **very feasible** category. In the validation process, the material expert stated that the developed media was suitable for use with several revisions in certain sections. The advice given is that in the instructions for use section there is a typo error and there are two buttons that have the same function. In addition, improvements were made to the placement of periods in learning objectives to be in accordance with the rules of good and correct Indonesian language.

The revision of the material is carried out based on the results of validation by material experts obtained through the assessment questionnaire, and supported by comments and suggestions for improvement to the developed media. The improvements are focused on several aspects, including correcting the user instructions that still contain *typos* and the duplication of buttons with the same function. In addition, adjustments were made to the use of punctuation, especially the placement of hyphens on learning objectives to be in accordance with the rules of good and correct Indonesian Language. The improvement aims to improve the clarity of information and the quality of material presentation in learning media. Comparison of media views before and after revision based on the results of the validation of subject matter experts is presented in **Table 8**.

Table 8. Revision of Material Expert Validation Results

Before Revision	After Revision
	

Remarks: In the instructions for use, a mute sound and turn on button is added and remove the button that functions the same.	**Remarks:** In the instructions for use, a mute sound and turn on sound button is added and a button that has the same function according to the material validation expert.
	
Remarks: In the learning objectives section, a period is added in the 4th learning objective.	**Remarks:** added a period in the 4th learning objective.

Based on the expert validation stage carried out by the Unity-based digital gamification assessment media with the gamification strategy developed has a very high level of feasibility. This is shown by the validation results of media experts of **96.6%** and linguists of **97.5%,** which are included in the very feasible category. The high feasibility value shows that the developed media has met the criteria as a good assessment media, both in terms of appearance, content, and language. This media is able to integrate gamification elements such as scores, levels, and direct feedback so that it can increase student motivation and involvement in the assessment process.

In addition, the use of *Unity* as a development platform, it allows for the creation of interactive and interesting media (Zuhair 2024). This is in line with the characteristics of digital learning media which are able to increase efficiency and objectivity in assessment because the system can provide results automatically. Although this study only reached the stage of expert validation, the results obtained showed that the developed media has the potential to be used in learning. Validation with a percentage above 61% has met the product feasibility criteria theoretically, so that the media can be categorized as suitable for use. Research by Nina Mariana, Dessy Triana Relita, and Anna Marganingsih (2024) also states that learning media with high validation results show an excellent level of feasibility to be used in the learning process.

Unity-based digital gamification assessment media with gamification strategies has several advantages over conventional assessment media. From the aspect of display, the media is designed interactively with a combination of text, images, audio, and animations that are able to attract the attention of students. The use of gamification elements such as scores, levels, challenges, and direct feedback makes the assessment process more enjoyable and able to increase students' motivation to learn. From the material aspect, the media has been adjusted to the learning outcomes and learning objectives of reading the speech text of class VIII speech. The material is presented systematically, contextually, and equipped with HOTS-

based questions so that it is able to train students' critical thinking skills. According to Lina Marlina (2023), the application of HOTS-based questions can improve students' critical and analytical thinking skills in learning. In addition, the digital assessment system allows teachers to obtain assessment results faster, objectively, and more efficiently. From the linguistic aspect, the media uses language that is communicative, effective, and in accordance with the rules of the Indonesian language so that it is easy for students to understand. The use of Unity as a development platform is also an advantage because it is able to produce media that is flexible, interactive, and can be run on various digital devices. Thus, the media developed not only functions as a learning evaluation tool, but also as a learning innovation that is able to increase students' reading interest and speech text reading skills.

CONCLUSION

The validation results showed that the developed media obtained a score of **96.6%** from media experts, **97.5%** from linguists, and **100%** from material experts who all fell into the very **feasible** category. This shows that the media has met the feasibility aspects in terms of appearance, content, and language. The developed media is also able to integrate gamification elements such as scores, levels, and direct feedback so that it can increase student motivation and involvement in the assessment process. In addition, the use of Unity as a development platform allows for the creation of interactive, interesting, and efficient media in the implementation of assessments. Thus, the gamification-based digital assessment media developed can be used as an innovative alternative in learning assessment, especially in speech text reading skills. This research is expected to be a reference for the development of similar learning media in the future. This research is still limited to the expert validation stage, so no test of the effectiveness of media use directly on student learning outcomes has yet been carried out. Therefore, further research is expected to test the effectiveness of media through direct implementation in the classroom learning process.

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