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Quizizz Application-Based English Learning Materials Assessment Instrument Development

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Abstract

The aim of this study was to develop appropriate English learning materials for junior high school students in Surabaya, East Java, Indonesia, as well as an assessment tool that satisfies the eligibility requirements and learning needs. The Design & Development (D&D) model was used to adapt the research procedure and the 4D model was utilized (Define, Design, Development, and Dissemination). The validation of instruments was related to the material, the media, and the language done by the 6 experts involving two media experts, two language experts, and two material experts. There was an 88.25% material/media aspect rate, an 88.45% construction aspect rate, and an 86.55% language aspect rate. Purposive sampling resulted in the selection of 67 participants who underwent field testing. The overall reliability of the questionnaire was 0.78, and the questionnaire was confirmed high reliable. The assessment materials were classified as "Valid and Feasible to be Used" based on the materials evaluation because they are appropriate in terms of content, language, presentation, and layout. The results demonstrated the development of an online assessment tool motivating students and piques their interest in the material being taught in class. As an additional benefit, Quizizz is an interactive quiz application that has been shown to be more effective at increasing students' enthusiasm for learning than the traditional quiz method, the findings can help educators (1) to identify what tools and approaches provided to assess students' achievements integrating with technology, and (2) to assess and provide interesting assessment for students through gamification-based.

Keywords: Quizizz, development, assessment, English learning

1. Introduction

Globalization, environmental issues, and English learning are all causing changes in technology and information, as well as educational challenges. These changes are occurring now because English is the foundation of all scientific fields and the advancement of technology (Cahya et al., 2020). Current technological advancements have numerous advantages that can be used for a wide range of purposes, including learning media (Lenk et al., 2020; Wibawa et al., 2019). Education and technological advancements are on the rise in Indonesia at the moment. One of the most important aspects of education that is currently open to technological advancement is the process of evaluating student learning (Sumarni et al., 2018).

Educators and students alike will benefit from technology. Instead of writing on the whiteboard, teachers can use PowerPoint slides. Technology can also help manage assessments (Hettiarachchi et al., 2014). In the teaching-learning process, assessment plays a major role (Euis Nursifa Laila Nugraha, Salsabila, 2021). As a result, it's a long-term and recurrent undertaking (Harris et al., 2009). Teachers and students can use these values to improve their teaching and learning by judging the students' decision, educational status, or achievement (Orsmond et al., 1997). A student's comprehension and the effectiveness of

teaching methods and materials will be revealed through the evaluation results (Porcaro et al., 2016).

Assessment is a well-organized basis for making inferences about students' learning development. A highly detailed and high resolution data record that is analyzed and displayed computationally are all features of digitally enhanced assessments and is defined as the process of gathering information to improve student learning (Swan, 2006). Thus, the assessment must be well prepared so that teachers and students can properly teach and learn (Bury, 2017), and it is critical to choose a teaching delivery method that emphasizes the effectiveness of interactive learning in order to maximize learning outcomes (Szee Huei et al., 2021). As a subset of evaluation, teachers must assess and evaluate students' learning achievement related to the impact of technology that has grown in education over time and leads to new learning perspectives, approaches, and contexts (Wulandari et al., 2019).

Skills and knowledge assessments are two types of assessment tasks (Gutierrez et al., 2010). Knowledge is defined as recalling or identifying specific items. It includes recalling previously learnt elements and contents (Orsmond et al., 1997). This can range from single facts to full theories, but all that is necessary is the recollection of relevant knowledge (Khoiriyah et al., 2018). Knowledge e-assessment includes simple question types like multiple choice, short answer, and fill-in-the-blank (Raymond et al., 2013). This style of evaluation is more efficient, provides more targeted feedback to individuals, and can cover more curriculum (al Alhareth & al Dighrir, 2014).

Efficient use of information and communication technology is essential when conducting technology assessments, and the continuous electronic assessment process is a means of presenting assessment activity and supporting technology management (Hettiarachchi et al., 2014). An online quiz is an example of a modern assessment method that incorporates technology tools, such as an online assessment, to define a modern assessment approach (Akhtar et al., 2019; Malik et al., 2021; Puspitayani et al., 2020). Teachers are increasingly using an online quiz application as an assessment tool that allows them to give students practical quizzes (Permana & Permatawati, 2020). There is also immediate feedback provided by the online quiz application in the form of an automatic score at the end of the quiz (Rahayu & Purnawarman, 2019; Zhao, 2019). There are numerous web-based applications that offer a variety of game-based quizzes that can be used to evaluate online learning (Szee Huei et al., 2021; Wibawa et al., 2019).

Using technology such as Quizizz application to evaluate students can increase their motivation and encourage them to be more careful when solving problems (Huei et al., 2021). Interactive questions can be used to increase the variety of questions presented to students and reduce or even eliminate boredom (Fulmer et al., 2015). Interactive questions pique the interest of students more than traditional questions or tests administered on paper (Beldarrain, 2006; Ika Dhamayanti, 2021). Student involvement in evaluating learning outcomes can be increased by using Quizizz in the classroom as a tool for assessing interactivity (Baartman et al., 2007; Muji et al., 2021). Quizizz will display multiple-choice questions with two, three, or four-point answers so students can answer quickly and review their answers later (Euis Nursifa Laila Nugraha, Salsabila, 2021).

Game-based problem-solving encourages learners to alter their thinking patterns by following the rules of the game during the problem-solving process (MacNamara & Murphy, 2017; Mauroner, 2019; Xing, 2013). Quizizz is an educational app that makes use of the concept of gamification to make learning more enjoyable (Akhtar et al., 2019; Euis Nursifa Laila Nugraha, Salsabila, 2021; Malik et al., 2021; Mei et al., 2018; Setiyani et al., 2020). After students have responded to each question, Quizizz will display pictures of memes to indicate whether the answer was correct or incorrect. This is a special treat for the students (Orhan Göksün & Gürsoy, 2019). Previous research has described various approaches to using

Quizizz. When it comes to organizing classroom activities and preparing for tests, Quizizz can help (Jiemsak & Jiemsak, 2020; Zhao, 2019). According to the findings of a previous study conducted by (Bury, 2017), the use of online assessment tools such as Quizizz motivates students and piques their interest in the material being taught in class. As an additional benefit, Quizizz is an interactive quiz application that has been shown to be more effective at increasing students' enthusiasm for learning than the traditional quiz method that relied solely on paper and pencil (Wibawa et al., 2019). The focus of this research differs from that of the previous research, which demonstrates the difference between the previous studies. It was discussed in greater detail in the previous research about the implementation of Quizizz as a learning evaluation tool in the classroom. The focus of this study is on developing an online assessment using Quizizz based on the gamification concept because research into this area is still limited.

Quizizz was used to develop the product during this study, and the materials were created in accordance with the English curriculum (National Curriculum Indonesia 13 which is called K-13) that was implemented in Surabaya, East Java, Indonesia. Teachers were tasked with leading effective online learning sessions during the Covid-19 pandemic, and Quizizz was used as a media assessment tool during that time. In this case, an e-assessment solution such as Quizizz is being utilized. An assessment system that goes beyond simply combining existing assessment systems for both skill and knowledge learning and assessment in an online educational environment is the focus of this research, which is based on the explanations given. Using Quizizz, any subject can quickly adapt the system because it is designed and developed to be standard and general. The purpose of this research is to develop an assessment instrument that meets the eligibility criteria as well as the learning needs of junior high school students in Surabaya, East Java, Indonesia, as well as to develop appropriate English learning materials for these students.

2. Method

Design and Development (D&D) is the research method that was employed, and the 4D model was utilized (Define, Design, Development, and Dissemination). The definition stage includes a needs analysis as well as English language teaching materials. This stage consists in putting together the instrument grid and placing the question instruments on Quizizz. The development stage is completed by validating the question instruments that were created and distributed to the experts. The validation of instruments was related to the material, the media, and the language. Following validation, the instrument was administered to the students from public junior high schools in Surabaya, East Java, Indonesia, who were then assessed. The dissemination stage was completed after the product was determined to be of high quality. In addition, online questionnaires were distributed to students in order to gauge their responses to the use of Quizizz.

Questionnaire and test were used as the research instruments. Validation sheets and student responses are included in this questionnaire sheet. Quizizz-based interactive questions can be validated using the validation sheet. Content, structure, and language are all taken into consideration. Two (2) media experts, two (2) language experts, and two (2) material experts validated the results of the instructional media design. The validation sheet includes a column for the validator to confirm comments and suggestions. In the pre-trial phase, the next step was to conduct reliability testing of the test items. On a limited scale of 67 students, a purposive sampling was used to test the instrument's validity and reliability, which was declared by an expert. Analysis of test item reliability using alpha Cronbach through SPSS 26 was used to categorize statistical data using a simple presentation technique. An instrument is said to be reliable if the reliability coefficient value is greater than 0.70 (R11>0.78) (Ledesma et al., 2002). There were six experts involved in the research

on the development of Quizizz as an assessment tool for English learning materials, and the criteria listed in Table 1 can be used to determine the level of media validity in the following ways:

Table 1. Validity Criteria

Range Validity	Level of Validity
85.01% - 100%	Very valid, or can be used without modification
70.01% - 85.00%	Valid, or can be used with minor revisions
50.01% - 70.00%	Less valid or should not be used because it requires extensive revision
01.00% - 50.00%	Invalid or not permitted to be used

This research's data set included both qualitative and quantitative information. The results of the expert team test assessment yielded qualitative data, while the results of the initial field test yielded quantitative data. A theoretical validation sheet was used to collect qualitative data. The theoretical validity sheet consisted of a series of Likert-scale questions, so the team of experts only gave checklist (√) marks on the "1 (invalid)", "2 (less valid)", "3 (simply valid)", "4 (valid)" and "5 (very valid)" in the available column according to the

assessment, then gave the conclusion by circling one of the options of LD (feasible to use), LDP (possible to use with improvement), or TDL (not worth using).
Students' responses to the use of Quizizz as an assessment instrument are measured using a questionnaire. The questionnaire is structured on a Likert scale (Casas Anguita et al., 2003). The options on the questionnaire were as follows: strongly agree (5), agree (4); quite agree (3); disagree (2); and strongly disagree (1). (1). The results of calculating student responses are adjusted in accordance with the criteria in the following table.

Table 2. Criteria for questionnaires based on student responses

Score	Category
80%-100%	Very interesting
60%-80%	Interesting
40%-60%	Less attractive
0%-40%	Not attractive

3. Results and Discussion

With this study, the goal was to develop an assessment instrument that would meet both the eligibility criteria and the learning needs of those who took part. This research activity discovered the following findings for each stage of developing a learning tool for assessment using the Quizizz application, which are demonstrated in the following sections.

1.2 Define

The results of the intended situation analysis (define phase) revealed that teachers preferred to use online quizzes, and in this study, a new type of instrument assessment was created to address this need. For a number of reasons, the teachers hoped that there would be an appropriate online quiz that they could use to assess the students' understanding of English materials. First and foremost, due to time constraints, teachers are unable to prepare their own quizzes, despite their heavy teaching loads and other administrative responsibilities. Second, it is difficult to locate an appropriate online quiz. According to them, some of the online quizzes available are not appropriate for use with the materials covered in the practical curriculum. The teachers must also be provided with online quizzes that can accommodate students with varying levels of ability and cover all of the topics covered in the course curriculum. Students in the ninth grade of senior high school are considered to be beginner learners when it comes to learning English as a foreign language. They each have a different set of abilities than the others. This difference has an impact on the different learning processes that each student goes through. In light of these scenarios, each online quiz question was developed based on three levels of skill: basic skill, middle skill, and high skill. Additionally, online quiz items were completed with questions that required the students to be able to identify the main idea of the passage, an expression, a detail, an inference, a reference, as well as a synonym, among other things.

Needs analysis is a series of early stages of research that is used to determine the difficulties that students face when learning. Needs analysis includes reviewing the literature and analyzing the problems that have been studied in previous research. According to the findings of the literature review, students occasionally answer questions by guessing. Students do not think about their answers correctly based on their understanding of the questions (Ding et al., 2016; Xiao et al., 2018). Meanwhile, (Nitko, 2001) points out that the quiz has a high degree of validity when it comes to diagnosing an individual's need. Students' learning will become more effective if quizzes are administered on a regular basis because they will receive immediate feedback. Furthermore, it is argued that the use of online assessment, such as the implementation of series online quizzes, is believed to improve students' academic results more than the use of a standard exam (Muji et al., 2021).

Identifying concepts used in the assessment instrument was the objective of the content, media, and language analysis. The curriculum for junior high school in 2013, which is based on measuring the indicators of learning that have been developed in accordance with Competence Standard-Basic Competence (CS-BC), serves as the basis for the instrument's eligibility criteria. (Bryce & MacMillan, 2009) found that students did not have a conceptual understanding of solving scientific literacy problems or understanding context in the texts until they were in the second year of high school (al Faizah et al., 2019). Students' abilities can be enhanced by completing practice questions that are based on their own experiences. In this study, an instrument for assessing student performance was created using Quizizz application.

1.3 Design

The preparation of the instrument grid, as well as the integration of English learning material and engaging questions using the Quizizz application, constitute the design stage. The preparation of the question instrument grid has the goal of determining the scope of instructions for creating questions that will be used (Khoiriyah et al., 2018). The purpose of this stage is to make it simpler to design the appropriate question instrument (Bennett et al., 1984). The preparation of research instruments, as well as the development of the initial design of learning media using Quizizz, were all critical aspects of the overall design process (Archambault et al., 2010; Permana & Permatawati, 2020; Puspitayani et al., 2020). It was decided to include the media validation sheets in the research instrument that was used to develop this assessment tool, and it was decided to use them as the learning media for this assessment tool. On top of all that, they examined the accuracy of the research instrument to determine whether or not it had been constructed correctly. Meanwhile, the initial design of learning media was completed and then loaded into the Quizizz application, which was running in the background. CS-BD and learning objectives, as well as learning materials, learning videos, and learning evaluations, were all taken into consideration during the development of the assessment media.

1.3 Development

The development stage includes the validation of the feasibility of the assessment instrument by experts through the use of Quizizz, as well as the testing stage. The following figure depicted the appearance of the development product that was created via Quizizz.

Figure 1. Assessment instrument in Quizizz

As part of this stage, expert validation was carried out in order to determine whether the assessment aspects of media and construction, as well as language, that had been developed were appropriate for measuring the variables that would be evaluated (Bennett et al., 1984). Expert validation was established, and the researchers conducted limited trials and main fields in their respective fields after receiving approval from the appropriate authorities. In order to obtain the most appropriate aspects involved for measuring what is being measured, some validators have made improvements and suggestions based on their findings during the validation (Fraenkel et al., 2012). As a result, the recapitulation result of the theoretical validity interpretation of the initial product's material aspects in accordance with the validation criteria, as shown in the following table, was determined.

Table 3. Aspects of theoretical validity in initial product materials interpretation

Rate Aspects	***Validation of Accomplishment (%)***	**Criteria**
Media	88,25	Very valid
Construction	88,45	Very valid
Language	86,55	Very valid
Average	**87,75**	**Very valid**

According to the results shown in Table 3, when referring to the validation achievement criteria established by (Ledesma et al., 2002), the theoretical validity of the initial product construction aspect can be classified as “Very Valid”. According to the validation results in Tables 2, the percentage of material rate media aspect done by experts was 88,25%, construction aspect was 88,45%, and rate aspect of language used was 86,55%. The data showed that the validity level of learning assessment via Quizizz application met

very valid criteria and could be used without modification because the percentage obtained was greater than 85% (Natalia et al., 2018). The development results yielded very good validation results from experts, indicating that the assessment instrument of learning media via the Quizizz application was feasible to use with very good criteria. Using the Quizizz application to conduct online assessments brought them many new experiences. Using Quizizz was equally simple. It is evident from the comments of students who had no difficulty and accessed it speedily.

The findings of the research and the recommendations from previous studies led to conclude that if the assessment instrument meets the validity criteria of the "valid" material aspect, the "valid" construction aspect, and the "valid" language aspect, it should be designated as the assessment instrument for use in the classroom (al Alhareth & al Dighrir, 2014). To determine the material feasibility of the assessment instrument, the experts carried out a material aspect test. As defined in this study, material validity refers to the consistency of instrument materials with learning indicators. The suitability and competence representation that students must achieve in order for the instrument improvement process to be completed were found to be related to the validity of the instrument material (Hettiarachchi et al., 2014). Following the recommendations of, it is necessary to examine the question or revelation of the instrument in order to obtain an acceptable quality question device (Archambault et al., 2010; Sumarni et al., 2018; Xing, 2013). As a result, it was revealed that the development assessment instrument met or exceeded the eligibility criteria for suitable or accepted assessment instruments in the development process.

During the process of the study, the 67 participants were put through a series of field testing. Student-researchers used Google to locate and complete an assessment learning activity called Quizizz using the Quizizz application as a medium. Consequently, students were able to use Quizizz as an instrument for their academic achievement after signing up with the code provided by the teacher. After that, students worked on quizzes to see how well the teacher's Quizizz app worked as a learning assessment tool for students in Surabaya's public junior high schools.

1.3 Disseminate

The final stage of this research would then involve determining the responses of students to the use of Quizizz as an assessment instrument. Objective questions that have been properly designed are valid and reliable tools for assessing students' meaningful understanding of the concepts, according to all of the findings from the items under investigation. Evidence-based recommendations (Mei et al., 2018; Rahayu & Purnawarman, 2019; Zhao, 2019) about the effectiveness of conceptual questions in assessing aspects of their understanding are supported by the findings of this study.

Alpha Cronbach's coefficient was used to assess the reliability of the questionnaire's results, which was done using SPSS 26. The overall reliability of the questionnaire was determined to be reliable by a coefficient of 0.78, and the questionnaire was confirmed reliable (Ledesma et al., 2002). It is important to consider the practicability of assessment instruments in terms of their ease of use. This aspect includes the appearance and layout of the assessment instrument, a portion of the assessment instrument's contents, as well as the application of the assessment instrument. This assessment instrument's content, presentation, and visual design are responsible for its overall appearance and layout. Responses from students were analyzed using a questionnaire that was distributed after the conclusion of the research. Table 4 illustrates the data.

Table 4. Students Responses Recapitulation Results

Indicator	Percentage	Criteria
Attractiveness	94,55	Very interesting
Content Quality	88,75	Very interesting
Language	89,65	Very interesting
Convenience	84,45	Very interesting
Average	**89,35**	**Very valid**

The average percentage of the four indicators is 89,35%, with most of the criteria being particularly “very interesting”. The average results of the four indicators, which include some very intriguing criteria, support previous studies (Akhtar et al., 2019; Priyanti et al., 2019). In terms of attractiveness, 94,55% of the respondents cited the very attractive criteria as the most important criterion. Then, in the term of content criteria, it showed 88,75 is classified into “very interesting”. Moreover, the number of 89,65% which was gained from language aspect indicated “very interesting”. Lastly, the convenience aspect through Quizizz showed high percentage in 84,45% as classified into “very interesting”. Using the Quizizz application, students may be inspired to work harder on their assignments because of the device's engaging interface (Amornchewin, 2018; Jiemsak & Jiemsak, 2020; Puspitayani et al., 2020). In addition, it is defined that using Quizizz in the classroom as a learning evaluation tool can increase student interactivity and engagement, which is supported by research (Akhtar et al., 2019; Amalia, 2020; Ika Dhamayanti, 2021; Szee Huei et al., 2021). Studying with Quizizz was found to be a highly motivating experience for participants, and the questions themselves were found to be easy to understand and practical to use in evaluating English learning, as evidenced by the data collected via a questionnaire.

The goal of this development research was to create an assessment tool that meets both the students’ learning needs and their suitability criteria. Validity criteria ensure the assessment tool's validity and reliability. The theoretical and empirical quality of assessment instruments can be seen (Ledesma et al., 2002). According to the findings of the research (al Alhareth & al Dighrir, 2014), an assessment instrument is valid if it meets the criteria valid including aspects of material, construction, and language. The experts tested the assessment tool's material feasibility. Material validity was defined as aligning instrument materials with learning indicators in this study. The instrument material's validity was linked to students’ suitability and competence representation in order to complete the instrument improvement process (Hettiarachchi et al., 2014). A good question device requires a good question or revelation (al Alhareth & al Dighrir, 2014; Gutierrez et al., 2010; Raymond et al., 2013; Sumarni et al., 2018).

The test results revealed some advantages of the assessment instrument through Quizizz. The text selection can broaden student knowledge as assessment instrument users, because the text used considers learning situations and text variations. The tests used to assess thinking abilities differentiated. The assessment had a nice introduction, overview of the components, questions, and instructions (Baartman et al., 2007; Hettiarachchi et al., 2014). Despite this, the assessment tool has some flaws. The difficulty level of the text in the presentation has not been noticed in the text selection. The assessment instrument’s critical thinking skills had no evaluative questions. However, the term on items that have an impact

on student difficulties (as users of the product) to understand the purpose questions on items was still lacking proper spelling. Fourth, readability assessment instrument associated with language use in the evaluation system.

Results showed that Quizizz learning assessment met very valid criteria and could be used without revision as the percentage obtained was greater than 85% (Natalia et al., 2018). According to expert evaluations, the assessment tool for learning media via the Quizizz application is able to be used with very good criteria for evaluation (Casas Anguita et al., 2003; Ledesma et al., 2002; Nitko, 2001). Many new experiences were gained through the use of Quizizz for online assessments. Quizizz was just as easy to use. Responses from students showed that they had no problems and were able to get to it quickly. Since many students have trouble with external issues like internet connectivity, the quiz can only begin when all participants have joined, and those who have joined must wait for others to join. Teachers can better manage class assessments when they use online quizzes, since students don't have as much time to engage in cheating, mocking, or discussion amongst themselves (Euis Nursifa Laila Nugraha, Salsabila, 2021). Teachers must be more creative in their teaching-learning activities if they hope to keep their students interested in the lessons they are teaching. When Quizizz was put in.

Conclusion

A very good assessment instrument meets the criteria for a very good theoretical aspect of the material, categorized construction, and language aspect. Material/media aspect rate was 88,25%, construction aspect rate was 88,45%, and language aspect rate was 86,55%. The assessment results could be used to develop learning media. Students prefer online quizzes over traditional paper-based questions, according to Quizizz. The students' responses confirm. Due to time constraints, students concentrate on answering questions. Cheating can be prevented. But there were some issues. A few blame their smartphone's internet connection for the problem. Students can be moved to a better connection area to resolve this. Using online quiz applications like Quizizz as a teaching and learning tool could be beneficial. Even when evaluating knowledge. Not every test or evaluation bores or scares students

This research had limited discussion which was conducted only at public junior high schools in Surabaya, East Java, Indonesia. Due to the effectiveness of Quizizz as a learning assessment, the product development and implementation can be used for either other Indonesian junior or senior high schools. Further research on Quizizz and its effectiveness in high schools or even universities may be possible by conducting similar research in other methods or designs such as mix-method, classroom action research or experimental design in specific language skills being investigated.

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