Development of Android-Based Quizizz Learning Media Using Test of Second Mathematis Instruments to Improve Intuitive Basic Computing Competence in Grade V UPT. SD Negeri Percobaan Medan

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Abstract. This study aims to improve students ' intuitive basic arithmetic competence through the process of developing Android-based Quizizz learning media using the seconds math instrument in class V UPT. Medan Experimental Public Elementary School The research uses the ADDIE development model (Analyze, Design, Develop, Implement and Evaluate). The aspects observed were student's basic intuitive arithmetic competencies using the Android-based Quizizz learning media that had been developed. The subjects of the study were 30 students of grade 5. The results of the study were obtained based on the Min Operations (OPM) through the A1 level ToSM (Test of Second Mathematics) math instrument to obtain intuitive basic arithmetic competency results in from an average addition of 34.82opm, subtraction of 32.02opm, multiplication is 35.12opm and division is 34.92opm, where the average OPM result is colored green and categorized as competent (complete). The suggestions put forward for further research are that in the future this application is expected to affect student achievement in class, this application can be developed into several platforms, and it is hoped that the research object can be expanded.

Keywords: Learning media , Quizizz , ADDIE Development Model , Mathematics Seconds , ToSM.

1 Introduction

Based on the results of the 2018 PISA, student's mathematical abilities have not met expectations and need serious attention, especially by the government, parents and teachers at school. More than 90 percent of students in grades 5-6 SD/MI suffer from arithmetic stuttering. It even extends to SMP/ MTs students to SMA/MA/ SMK (PPMD, 2021). One way that can be used in overcoming math stuttering in students is by increasing the competence of intuitive thinking. Intuitive basic arithmetic competence is the skill to use cognitive abilities (knowledge of basic arithmetic operations of addition, subtraction, multiplication and division) as well as non-cognitive (spontaneous attitudes) in answering simple operational questions directly and without thinking for more than two seconds. Mathematical intuitive thinking style can trigger students ' creativity in solving math problems (Usodo, 2011). Intuitive basic arithmetic skills can be honed by using second math instruments. ToSM (Test of Second Mathematic) is a simple calculation test that includes addition, subtraction, division, and multiplication. Furthermore, " ToSM is actually a type of training as / in / for very

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measurable results. ToSM ideally is both measurement and training " (Fazz, 2020). ToSM can be an instrument in improving students ' basic intuitive arithmetic competencies, especially in today's digital developments. To take part in the challenges to digital development, a digital-based learning media is needed so that it can be utilized in an effort to improve students ' intuitive basic arithmetic competencies. One of the innovative learning media packaged in a game is Quzizz. Quizizz is a web tool for creating interactive quiz games used in classroom learning. Quizizz is a learning tool or media that is believed to be able to motivate students in learning with attractive features (Amornchewin, 2018). Quizizz can be accessed easily using Android. Quizizz can be downloaded on Playstore. so that in the 4.0 era students can easily learn to use Android.

2 Research Method

This study uses the ADDIE development model (analysis, design, development, implementation, and evaluation). The concept of the ADDIE development model is to develop a product to improve learning performance. The following is an illustration of the ADDIE development model cycle, which the author adapted to Robert Branch's book (2009), namely :

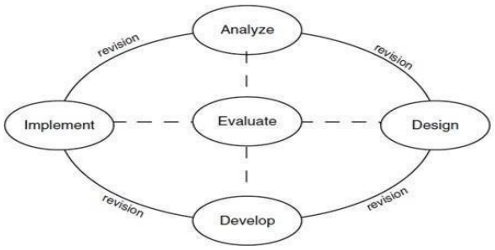

Figure 1. Schematic of the ADDIE Model Development

1. Analyze

The main activity in this stage are to analyze the reasons for the need to develop learning media from the problems found . To assist in this analysis activity , the researcher conducted an observation and interview with the teacher of class V UPT SD Negeri Experiment Medan

a) Employment Gap Analysis

Based on the results of initial observations conducted by researchers on November 18 , 2022 , the researchers found a problem , namely the teacher only used the teacher's book and student books as a source of learning without the use of learning media that supported the process of distributing material to students . From the results of the interviews it was found that there was no interactive learning media

b) Identify Student Characteristics

The number of students in class V UPT SD Negeri Experiment Medan totaled 30 students . Based on the results of observations at UPT SD Negeri Experiment Medan , it can be concluded that students were less enthusiastic about participating in learning .

c) Identify Available and Required Resources

At this stage the researcher analyzed several resources obtained from observations and interviews with the teacher . The first resource to be analyzed is the content resource. Where UPT SD Negeri Experiment Medan already has a library, computer lab, prayer room. Even though LCD projectors are not available in each class , the school already has one that can be

loaned to all class . Another thing is that all students already have cellphones for learning with the agreement to the teacher and parents and strict supervision of their use at school.

d) Formulate Instructional Objectives

Based on the problems found and several analyzes carried out by the researchers , it can be concluded that UPT SD Negeri Experiment Medan requires the development of a technology-based media that can improve intuitive basic arithmetic competence in number material in order to achieve learning objectives effectively so that the instructional objectives of this study are creating or developing a technology-based learning media that is able to increase student interaction in learning .

e) *Develop a work plan*.

At this stage the researcher makes a work plan framework of the course of product development, the researcher makes the steps to be carried out in each stage.

2. Design

As for some of the activities carried out by researchers at the design stage are as follows :

a) Material Selection Based on the problems found and the results of consultations with the class V teacher , that the material used in the Quizizz media is natural number material to improve students ' intuitive abilities , there need to be clear visualization in order to provide students with a deeper understanding

b) Designing Product Models At this stage the researcher designed the framework of the Quizizz media starting from the design , color , contents of each slide page , and determining what supporting components was needed in the media realisation stage . The results of the Quizizz media design are as follows :

1) The media is designed using the help of Canva For Education , where there are many features that can make media display more attractive .
2) The colors used are the colors from the Quizizz theme itself , namely purple , dark blue , light blue , pink and orange , which are to create a consistent color design .
3) Determine the supporting components of the media , such as determining the appropriate images , looking for design references , looking for reference questions , etc .
4) Fonts or letters used in the media , namely fonts that vary from several fonts that have been designed through Canva For Education .

c) Preparation of Instruments

1) Validation Instrument

The form of the validation instrument is in the form of a checklist questionnaire , each consisting of several statements that have 5 rating scales , and the validation questionnaire also provides criticism and suggestions columns which are intended for validates

2) ToSM Instrument

The Mathematical Seconds instrument used to measure students ' Intuitive Basic Computing Competence is using the Tosm Level A1 application for / of the following criteria : . The completeness indicator is seen from the magnitude of the intuitive basic arithmetic competency value , which is in the category :

- Incompetent : from 0 to 30 OPM
- Competent (Complete) : above 30 - 60 OPM
- Competent (Special) : above 60 OPM .

3. Develop

The development stage is the stage of product production realization, where what has been designed or designed is realized into reality. The development step includes activities to create and modify learning media.

1) Media Creation
   At this stage the researcher begins to realize the product that was designed in the previous stage. Because Quizizz is actually an online evaluation tool that can only contain quizzes that cannot be designed to be attractive, therefore the researchers designed the contents of the media first using Canva for Education, so that the display becomes more attractive and can choose the desired colors.
2) Media Validation
   In addition to developing the media, at this development stage there are also validation activities. Validation was carried out by media experts, material/content experts, and learning experts.

4. Implement

The implementation phase is carried out after the developed media has gone through the validation stage by several validators. The Quizizz media field trial activity was carried out by 30 UPT class V students. Medan Experimental Public Elementary School. Before conducting the media trial, the researcher gave addition, subtraction, multiplication and division questions through the ToSM instrument to all students, which aimed to find out students' initial understanding of learning mathematics in natural numbers.

5. Evaluate

The concept of the evaluation stage is how researchers are able to evaluate the entire model, where the product being developed will be evaluated at the end of each stage to determine the feasibility level of the product being developed. So at this stage the researcher analyzed the validation data. According to Branch, the purpose of the evaluation stage is to assess the feasibility of the product being developed. Evaluation and revision are carried out at each stage with the aim of creating a final product that is feasible and effective for use. According to Branch, the product feasibility evaluation stage can be seen through three aspects, these three aspects are:

1) Performance, the performance aspect is the quality of the product being developed.
2) Learning (Results), this aspect is seen from the changes produced after using the product being developed, from the results it can be seen whether the product being developed does indeed have an influence on the learning process.
3) Preception, this aspect is seen from the perceptions and responses of students about the product being developed where the researcher uses a questionnaire as a data collection.

3 Result and Discussion

For Quizizz media validation it was carried out by two experts with a validity level of 91.57% and 83.68% which were declared suitable for use as learning media and for material validators the validity level reached 95%. The results of the study were obtained based on the Permit Operation (OPM) through the ToSM (Test of Second Mathematics) level A1 mathematical instrument to obtain intuitive basic arithmetic competency results with an average addition of

34.82 opm, subtraction of 32.02 opm, multiplication of 35.12 opm and division of 34.92 opm, where the average OPM result is in green and categorized as competent (complete).

Table 1. Score of Multimedia Content/Material Expert Assessment.

Evaluator	Media Aspect	Guide and Information	Program Performance	Systematics, aesthetics and Principles of Design	Total	Mean
1	Score Total	14	45	115	174	91.57 % Valid
	Item Score	15	50	125	190	
2	Score Total	13	42	104	159	83.68 % Valid
	Item Score	15	50	125	190	
Score Total		**27**	**87**	**219**	**333**	
Score Mean		**4,5**	**4,35**	**4,43**	**4,43**	
Evaluation		**Valid**	**Valid**	**Valid**	**Valid**	

According to content/multimedia material experts in the assessment, namely: aspects of guidance and information worth 27 are in the "very feasible" criteria, aspects of multimedia content/material are worth 87 in the "very feasible" criteria and evaluation aspects are worth 219 are in the "very feasible" criteria. The mean score of the expert assessment of the multimedia content/material developed is 4.43 which is in the "very feasible" criteria. The average of the results of the assessment of multimedia content/material experts on the development of Android-based Quizizz learning media development using seconds math instruments to increase intuitive basic arithmetic competence in natural number material can be seen in the following figure

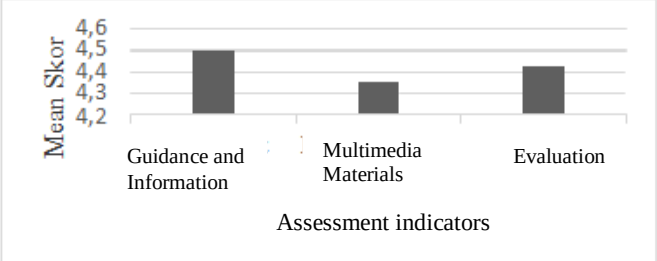

Figure 2. Results of Expert Assessment of Multimedia Content/Material

Material and Instrument Validation Results

The research that will be carried out in this study is development research with the title "Development of Android-based Quizizz learning media using second math instruments to increase intuitive basic arithmetic competence in natural number material in grade 5 UPT SD Negeri Experiment Medan". Before the learning media and research instruments are tried out, all learning tools and research instruments are validated by expert and practitioner validators. The validators in the study were five validators consisting of 2 lecturers from the Basic Education Study Program at the Medan State University Postgraduate Program and two elementary mathematics teachers, namely as follows:

The validation carried out on learning devices is intended to produce appropriate learning media devices. Based on the results of the expert's assessment, revisions were made to the learning device. Suggestions from the validator are used to improve learning devices. The learning tools in this study were material, second math instruments and student mathematical independence questionnaires.

Table 2. Learning Device Validation Results

No.	Appraised object	The average value of the total validity	Validation Level
1.	Conten/Material	4,83	Valid
2.	Instrumen of Mathmatic	4	Valid

The Criteria of validation is :

1 ≤ Va < 2: invalid
2 ≤ Va < 3: less valid
3 ≤ Va < 4: quite valid
4 ≤ Va < 5: valid
Va = 5 : very valid

Based on Table 2 above, the average total validity of each learning device is at the interval: 4 ≤ Va < 5. Based on the validity criteria, it can be said that the learning device developed is valid.

OPM Value Data based on ToSM Instruments

In the development of Quizizz learning media there was a significant change in students' OPM scores to 34.82 (addition), 32.02 (subtraction), 35.12 (multiplication) and 34.92 (division). Based on the data above, the development of Android-based Quizizz learning media can improve intuitive basic arithmetic competence in Real Number Material in grade 5 V UPT SD Negeri Experiment Medan based on the second mathematical instrument.

4 Closing

Based on the results of validation with several expert teams, the validity of the Quizizz media according to the media expert's assessment is very valid and has a very attractive appearance and is effectively used as Quizizz learning media in learning integer mathematics. Based on the analysis of scores, it can be concluded that there is an increase in OPM in student learning outcomes where the average student score is complete with scores between 20-40 OPM. So that there are differences in student scores before and after using Quizizz learning media in learning mathematics

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