Riwayat

Original Article

Development of Assessment Instruments on Technology for Life Materials Based on Wordwall in Typhoon E-Book for Elementary School Students

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Abstract:

The assessment process carried out in schools mostly still uses paper or paper tests, which require high printing costs and when checking the results of the assessment is quite time-consuming, sometimes there are errors in correcting. sometimes distracted by other activities as a teacher. The purpose of this research and development is to help overcome the above problems by developing an assessment instrument in the form of a word game that is certainly liked by children and facilitates the work of teachers. This development research uses the Thiargarajan method with the 4D method. Data collection from interviews, observations, and questionnaires. The results of product validation by a team of validators using Aiken's V formula are valid. Small-scale trials using student and teacher response questionnaires with very good results. In the large-scale trial, 30 students were sampled using Excel and SPSS with a mean N score of 0.8990. 0.7 and N-Percent 89.89% >76 which means valid and reliable.

https://jurnal.usk.ac.id/riwayat

Keywords: Wordwall, e-book, assessment instrument, Technology

Introduction

Based on the results of interviews with teachers at school, data was obtained that the assessment activities carried out were manual, namely using paper and taking time when examining the assessment results while the majority of teachers had electronic devices in the form of laptops and gadgets that could be used for evaluation activities (Marlene, 2022). Similarly, students enthusiastic about information and technology can operate gadgets. Assessment of learning outcomes also needs to be done by utilizing the Wordwall application as an assessment instrument development in the form of efforts to adjust the use of ICT. Assessment instrument development is the process of designing, developing, and validating tools or methods used to measure or assess certain abilities, achievements, or characteristics of individuals or groups (Lubis &; Nuriadin, 2022). These assessment instruments can be tests, rubrics, grading scales, or other formats used to collect relevant data in the assessment process. The purpose of developing assessment instruments is to ensure that they are valid, reliable, and in accordance with the assessment objectives set (Febriani, 2021).

Received: September 1, 2023 – Revised: November 2023- Accepted: Desember 18, 2023 - Published online: Januari 10, 2024

Young people, including elementary school students, continue to experience changes in communication patterns, social interactions, and the influence of technology on traditional culture and values. Problems arising from the use of devices in elementary school students tend to be negative, students are more fond of playing online games which results in addiction, forgetting study time, meal times, rest periods, and many other negative impacts. Therefore, it is important for us as educators to understand and evaluate the impact of the modernization of communication technology on the sociocultural changes of elementary school students (Rofiq et al., 2019). Student interest in games can be used for Android-based learning outcomes assessment activities using the *Wordwall platform*.

Wordwall application is a media application used to learn, teach, and evaluate student knowledge. This application is a creative application that provides various templates to make learning more interesting and meaningful for students. The app is accessible through mobile phones and is easy to use for both basic and advanced levels. However, the app requires an internet connection to use, and the font size cannot be changed. (Savira &; Gunawan, 2022). The process of assessing student learning outcomes by teachers so far still uses test papers, analyzing manually, and recapping assessments manually, this is a lot of time-consuming for teachers. At the same time, the use of technology in the learning process is also increasingly widespread. Among the types of games used in *Wordwall* are *Wordsearch* and *Open the Box*. The platform offers an interactive and engaging learning experience for elementary students and enables technology-based learning. The advantages of using *the Wordwall* application as a learning medium include this application can increase student interest and motivation in learning by providing quizzes and interactive games, improving learning outcomes, can providing teachers with an easy way to evaluate student learning outcomes (Dasar, 2022).

Methods

Research conducted using *research* and *development*. This research uses a 4-D model development research design according to Thiagarajan. This includes 4 stages, namely the *define,* design, develop, *and* disseminate stages *(Oktafiani, 2023)*. (Oktafiani, 2023) At the define stage, the researcher collects various necessary information. Information taken according to the results of the needs analysis, the information is to be used as material for planning instrument products that are expected to meet the needs sourced from the object of research. At the design stage, researchers design and develop an initial draft of the assessment instrument (Auliya, 2021). The information obtained at the define stage is used to develop the initial design. Furthermore, at the initial development stage, the product draft that has been designed at the design stage will be validated validators. Products are validated by material experts, educational media experts, and linguists. At the development stage, analysis, evaluation, and revision of assessment instrument products are carried out if there is anything that needs to be revised. After the product design is validated by the validator, the weaknesses will be known and the next stage is for the researcher to make improvements to the electronic module design based on the input provided by the validator. After revising the design, researchers conducted product trials to measure the effectiveness of assessment instruments in learning. The next stage of dissemination is dissemination to teachers in the KKG forum (Adiatmana & Hasan, 2022, p. 3840).

The level of definition (define) covers: 1) Front-end Analysis), 2) learner analysis, 3) task analysis, 4) concept analysis, and 5) specification objective formulation. The

planning stage (design), Includes: 1) criterion-tes construction, 2) media selection, 3) format selection, and 4) initial plan. The development phase includes 1) expert appraisal and 2) limited testing (developmental testing). The dissemination phase includes 1) validation testing, 2) packaging, and 3) diffusion and adoption (Kemendikbudristek BSKAP, 2022).

Results

The research subjects were located at SDN Argapura, SD IT Al-Hikmah, Harjamukti District, Cirebon City, and SDN Kartini, Kejaksan District. The population that was the subject of the study was 97 students of grade V. The feasibility of assessment instruments developed on the material Technology For Life Based on Wordwall In Typhoon E-Book for elementary students has been tested on media experts, material experts, and linguists using the Likert scale and processed with Aiken's V formula.

Table 1. Qualifying Test.

Expert	Score maximum	Number of scores	Percentage	Information
Media expert	80	72	93%	Decent without revision
Material expert	80	76	95%	Decent without revision
Linguist	40	38	95%	Decent without revision

The results obtained from media experts' 0.87 criteria are very valid, material experts' 0.93 criteria are very valid and linguists' 0.93 criteria are very valid. Thus, the assessment instruments developed are very valid.

Practicality Test

Test the practicality of the instrument based on the percentage of teacher and student responses. The number of respondents was 30 people each.

Table 2. Respondent Practicality Table.

Respond	Score maximum	Number of scores	Percentage	Information
Teacher	1.800	1.654	91,88%	Very practical
Student	1.200	1.098	92%	Very practical

To test the effectiveness of the instrument, researchers use SPSS and the N-gain formula to determine the effectiveness of using a method or treatment. The n-gain score is done by calculating the difference between the posttest value and the pretest value. The data used were 30 students for a large sample (Ardianti & Amalia, 2022).

Table 3. Statistics Effectiveness Analysis

$$\text{N-Gain} = \frac{\text{score posttest - score pretest}}{\text{Maximum score - score pretest}}$$

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Ngain_score	31	.17	1.00	.8990	.22194

Ngain_Persen	31	16.67	100.00	89.8985	22.19429
Valid N (listwise)	31				

Analysis data was obtained using 30 large cluster samples. From the results of data analysis using SPSS, the effectiveness of word wall-based assessment instruments *obtained mean data of N-gain_score 0.8990 > 0.7 in the category of high effectiveness and N-gain_Persen 89.8985 > 76, meaning that the use of wordwall-based assessment instruments has been effective* (Nurlaya, 2020).

Small-scale trials

The word wall-based assessment instrument *in the* e-book *is revised according to expert advice, so the next stage is small-scale* trials. A small-scale trial with a sampling of 10 students in the class V random cluster of SD Negeri Argapura Kota Cirebon, provided that 4 students represent high academic rank, 3 students with medium academic ability, and 3 students with low academic ability. Small-scale trial activities are useful to determine student and teacher responses regarding the use and readability of learning media. The results of student responses are used as consideration in improving the assessment instruments that have been developed. The following is a description of the results of the student response questionnaire (Gandasari & Pramudiani, 2021).

Table 4. Student response questionnaire

Respond	Score maximum	Number of scores	Percentage	Information
Student	400	374	93%	Excellent

Based on the table of the results of the response of grade V students of SD Negeri Argapura in product trials against good word wall-based assessment instruments. The questionnaire is also the basis for no technical revision to the assessment instrument. Small-scale trial questionnaires were also given to class teachers. The following are the results of the analysis of teacher response questionnaires on small-scale tests:

Table 5. Teacher response

Respond	Score maximum	Number of scores	Percentage	Information
Teacher	60	58	96%	Excellent

Based on the table (teachers) shows the teacher's response to word wall-based assessment instruments in small-scale trials including the very good category.

Large-Scale Trials

A large-scale trial was carried out by giving material to 30 students in grade V of SD Negeri Argapura. Wordwal-based assessment instruments *in* e-books are used as learning resources in learning activities. Before using word wall-based assessment instruments in *e-books*, students take a pretest first. One week before the learning activity is carried out, the teacher informs the parents of students so that students are brought gadgets from home to facilitate learning activities. Furthermore, teachers and researchers provide learning in the classroom using *e-book-based* teaching materials as a support for material delivery. In learning activities, teachers refer to teaching modules (Irawati, 2023). In learning activities, teachers also divide students into several groups with the aim of facilitating the delivery of material through these teaching materials.

Teaching materials and assessment instruments are displayed using projectors and student books to make it easier for students to watch and use these teaching materials and assessment instruments, Students can pay attention to teacher explanations and try to use assessment instruments on their respective gadgets. Students discuss in groups and work on word wall-based assessment instruments (Nadia et al., 2022).
Here are the results of large-scale trials.

Table 6. Scala Variable

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded	0	.0
	Total	30	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.742	31

Instrument reliability testing was carried out on 30 students with a significance level of 5% and degrees of freedom (*df) = n - 2 = 30 - 2 = 28,* the value in r table *0.374*. The results of the Chronbach alpha reliability test obtained a value of 0.742 greater than the minimum value of 0.70 proposed by Heale and Twycross, which was 0.70 or in other words, the calculated r result was greater than 0.70 (0.742 > 0.70) which means that the question is reliable (Anggraini, 2023).

Conclusion

Based on the results of research development and discussion of Wordwall-based assessment instruments for technology materials for life at SDN Argapura, SD IT Al-Hikmah, and SDN Kartini V, several conclusions can be drawn as follows: Researchers, developing Wordwall-based teaching materials that are integrated with e-books through several stages, namely (1) problem identification; (2) data collection researchers conduct pre-research with observation and interviews; (3) Product Design The development of this learning assessment instrument was made with the help of Canva's graphic design web, consisting of cover components, introduction sheets, materials, and the final appearance in the form of a word wall template; (4) validation of designs carried out by researchers by assessing learning media by media experts, linguists, and material experts; (5) design revisions; (6) product trials in small groups; (7) trial use in large groups.

Wordwall-based assessment instruments are developed based on the assessment of experts. The media has met the valid criteria of several experts in their fields. Assessment from media experts gets a percentage of 90% with very decent criteria. Material experts are 95% with very feasible criteria, while assessments from linguists get a percentage of 95% with very feasible criteria. Wordwall-based assessment instruments that have been developed are effectively used as assessment support in learning and

improve the quality of learning which can be viewed from improving student learning outcomes in the cognitive realm of science lesson content technology material for life. These results are obtained through analysis of pretest and posttest values. The results of the N-gain analysis showed values of 0.742 > 0.70. It can be concluded that the instrument is reliable.

Suggestion

Based on the results of development research conducted by researchers, the suggestions given are as follows:

1. Teachers can create similar learning evaluation tools with different materials.
2. The presentation of material can be expanded, and references in e-books expanded so that they can be used as learning modules as well as assessments.
3. The development of word wall-based assessment instruments can be used as a reference in learning assessment activities.

The development of assessment instruments becomes a monumental work of teachers as intellectual property. An innovative and creative teacher according to the demands of the Merdeka curriculum.

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