Riwayat

Original Article

Development of Wordwall-based Indonesian Geographical Condition Assessment Instrument in Modipaskogo E-Book for Elementary School Students

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Abstract:

The ability to develop assessment instruments is an integral part of pedagogical skills that are needed by teachers to achieve optimal learning outcomes, the reality in the field is that the implementation of learning evaluation is still conventional with paper and pencil test instruments, has not utilized technology, especially in science learning Indonesian Geographical Conditions material in class V, lack of understanding or teacher trust in the use of alternative instruments that in accordance with the learning model developed, so that the learning outcome data obtained by class V students is not so optimal. As many as 65% of the number of students have not been able to achieve learning goals, besides that students look less motivated and not excited when working on learning evaluations. The purpose of this study is to develop a Wordwall-based assessment instrument in the Modipaskogo E-Book (Geographical Conditions IPAS Module). The method used in this study is the research and Development (R&D) Model ADDIE (analysis, design, development, implementation, and evaluation). Based on data analysis and discussion, the conclusions of the Wordwall-Based Indonesian Geographical Conditions assessment instrument in the Modipaskogo E-Book are valid, reliable, very effective, and very practical to use.

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Introduction

The assessment component is a part that should not be left out of the learning process because carrying out teacher assessments can measure the mastery of student competencies and can be used as feedback for teachers to improve the learning process to be more effective (Wildan, 2017, p. 132). Assessment is an important part of the process of evaluating and monitoring student progress. To ensure accurate and reliable assessments, appropriate and effective assessment instruments are required. An assessment instrument is a tool used to gather information about the knowledge, skills, attitudes, or other characteristics of the individual being assessed. The development of assessment instruments is a systematic process of designing and structuring tools that involve planning, designing, developing, and validating to measure and evaluate the abilities, knowledge, skills, or behavior of learners. The goal is to obtain accurate and meaningful information about learning progress or achievement of desired competencies more efficiently.

The ability to develop assessment instruments is an integral part of the pedagogical skills that teachers need to achieve optimal learning outcomes. The development of assessment instruments is significantly related to technological developments. Technology has enabled education to undergo a transformation in the way assessment instruments are developed, implemented, and evaluated. Technology enables the development of digital-based assessment instruments, such as quizzes, online assignments, or interactive platforms such as *Wordwall*. This allows students to access and complete assessments online. Information system technology makes the need for information faster, more efficient, and more flexible because the storage media facilities offered both *online* and *offline* are increasingly integrated and can be used anywhere at any time. A teacher is required to be able to keep up with the times, To conduct an assessment of students not only *offline* but can be done online (Hariono et al., 2021, p. 59).

Wordwall is one application that can be used as a medium and learning evaluation tool. The *Wordwall application* can be accessed through *the website* and is usually used as a learning evaluation tool. The *Wordwall application* contains *templates* that can be used to fill in material or create lesson questions. There are many ways to deliver material and questions, such as by matching, grouping, or making essays (Aidah &; Nurafni, 2022, p. 167). Some of the advantages *of game Wordwall* are that it's free for the basic version with lots of *templates*. In addition, games that have been created can be sent directly via links through platforms such as WhatsApp, Google Classroom, and others. Many types of games are available in *Wordwall Education Game,* including *crossword, quizzes, random cards,* and more. An added advantage is that the games that have been made can be printed in PDF form, which will make it easier for learners who have difficulty connecting (Imanulhaq & Pratowo, 2022, p. 34).

Several research results related to the use of the Wordwall application *include research conducted* (Lubis &; Nuriadin, 2022, p. 6890) suggesting that "the use of the Wordwall application is effectively used in learning and is able to improve student learning outcomes, helps students remember the material taught, be able to increase student motivation and enthusiasm in learning." Research conducted by Imanulhaq &; Pratowo (2022, p. 40) "the use of *word wall game* media in grade II Mathematics learning can increase student learning motivation." Research conducted by Gandasari & Pramudiani (2021, p. 3695) "One of the teacher strategies that can be applied so that

children are motivated in learning so that they are on time to do assignments using *the word wall* application." Next is the research result of Sukma &; Handayani, (2022, p. 1026) "The use of interactive media based on wordwall quiz affects the learning outcomes of Science Class IV SDN Pasir Putih 03." The assessment used at SDN Kartini 5 school still uses *paper and tests and* has not used the development of instruments according to the needs of current developments in science and technology, such as the use of technology that can be used to help teachers and students optimize the existence of technology, especially *websites*, more specifically the *Wordwall* application. The curriculum used in this school is the Merdeka Curriculum.

Curriculum Merdeka is a curriculum with diverse extracurricular learning where the content will be more optimal so that students have enough time to explore concepts and strengthen competencies. Teachers have the flexibility to choose various teaching devices so that learning can be tailored to the learning needs and interests of students. Projects to strengthen the achievement of the Pancasila Student Profile are developed based on certain themes set by the government. The project is not directed to achieve a specific learning achievement target, so it is not tied to subject content. Teachers have a very important role in the development and implementation of the curriculum, teachers are very instrumental in implementing the policy of freedom of learning. Teachers can cooperate effectively and collaboratively with the development of the school curriculum by organizing and compiling materials, textbooks, and learning materials. Teacher involvement in the curriculum creation process is very important to adapt curriculum content to the needs of students in the classroom. Teachers have knowledge of student psychology and teaching techniques. The teacher also serves as an assessor to evaluate student learning outcomes. Therefore, teachers must have the attributes of planners, designers, managers, evaluators, researchers, decision-makers, and administrators to create an Independent Curriculum. At every stage of curriculum development, teachers can play these roles (Anggraini et al., 2022, p. 294).

Teaching and learning activities carried out at SDN Kartini 5 in addition to implementing the Independent Curriculum, teachers have also implemented various motives and varied learning models and utilized technology, for example, in explaining that teachers have used *PowerPoint Presentation (PTT)* and sometimes even teachers ask for online learning videos via *YouTube*, the use of *Chromebooks* As a learning medium, facilities and infrastructure have supported teaching and learning activities such as the availability of internet networks, *Chromebooks*. The location of the school is in the middle of Cirebon City, and the economic background of students is from middle to upper middle class. When teachers evaluate learning, teachers still use written assessment instruments with paper media that have not utilized technology, especially in learning science material Indonesian Geographical Conditions in class V. Lack of understanding or teacher trust in the use of alternative instruments that are in accordance with the learning model developed, so that the learning outcomes obtained by grade V students are not so optimal. As many as 65% of the number of students have not been able to achieve learning goals, besides that students look less motivated and not excited when working on learning evaluations. Along with the advancement of information and communication technology, the development of Android-based IPAS assessment instruments has become an attractive option. The use *of mobile* devices such as *smartphones* and tablets commonly used by students and teachers can provide opportunities to improve the efficiency and effectiveness of assessments in science

subjects. In today's digital era, technology has played an increasingly important role in the world of education. The use of *mobile devices* such as *smartphones* and tablets has become common among students and teachers. The development of android-based assessment instruments for Natural and Social Sciences (IPAS) subjects can be an innovative and effective solution in improving the quality of learning. An increasingly sophisticated and digital educational environment offers much potential for the use of technology in assessment. Android-based assessment instruments can integrate technological elements, such as custom apps and software, with relevant IPAS content. This can improve student interaction with learning materials and facilitate the collection, storage, and analysis of assessment data.

One of the learning outcomes of phase C science lesson content is that students use conventional/digital maps to recognize the location and geographical conditions of the country of Indonesia with one of the learning objectives of students examining the geographical conditions of Indonesia as an archipelagic/maritime and agrarian country and identifying natural wealth. Mastery of material on Indonesia's Geographical Conditions has many important benefits for didk participants, including helping students develop an understanding of their country of residence, as well as appreciating the existing geographical and cultural diversity, learning about Indonesia's physical characteristics such as islands, mountains, rivers, and seas. It is important in forming an understanding of the natural environment, learners understand how geographical conditions affect the economic potential of an area. For example, large islands and the presence of the sea make transportation and trade an important part of the Indonesian economy, geographical conditions have an impact on cultural development and social interaction.

For example, the culture and life of archipelagic people will be different from areas on land, The shape and geographical location of Indonesia affect the means of communication. Understanding geographical conditions helps students realize why the development of transportation infrastructure such as roads, bridges, and ports is very important in various regions. Overall, an understanding of Indonesia's Geographical Conditions and their impact on various aspects of life helps learners form a broader view of the world around them, increasing their knowledge of the country and culture, as well as helping them connect learning with real-life. Conditions in the field, there is the potential to improve student learning outcomes in science learning, especially material on the Geographical Conditions of the Indonesian region by developing assessment instruments with the aim of students gaining new experiences when conducting learning outcomes tests and it is expected that students are also more motivated in following classroom learning by using an android-based assessment instrument, *namely Wordwall*. To be able to attract and motivate students to study the material on Indonesian geographic conditions, the author packs a *Wodwall-based* assessment application that integrates modules in the form of *an E-Book*. An E-book (electronic book) digital version of a conventional book version that can be read using electronic devices such as computers, *tablets,* or *smartphones*. The author also received support from the Principal, colleagues, and grade 5 teachers to be able to develop android-based assessment instruments through interviews conducted by the author including:

Based on the background description above, the use of the *Wardwall application in* carrying out learning evaluations of social studies lesson content in class V Geographical Conditions material is expected to be a solution in improving student

cognitive learning outcomes. The author is interested in conducting in-depth research as outlined in a thesis scientific paper entitled "Development of Wordwall-Based Indonesian Geographical Condition Assessment Instrument in *Modipaskogo* E-Book for Elementary School Students."

Methods

This research uses Research and Development (R&D) development research. According to Gay Emir (Nurhamidah, 2021, p. 82), "Research and Development (R&D) is an effort to develop an effective learning product that is used in the learning process, used not to test theory." Meanwhile, according to Borg and Gall (Nurhamidah, 2021, p. 82) states that "Research and Development (R&D) is a process used by researchers to develop and validate learning products." The product resulting from this research is a Wordwall-based assessment instrument. The development model in this study is the ADDIE model which consists of analysis, design, development, implementation, and evaluation. The selection of the ADDIE R&D research model is based on the consideration that the model is arranged in a systematic sequence based on problem-solving. Data collection techniques in this study use non-test techniques and test techniques from the stages of analysis, design, development, application, and evaluation.

Results

1. Science Learning material on Indonesian Geographical Conditions in Elementary Schools

Based on the results of observations and questions and answers made by researchers, when learning science material Indonesian Geographical Conditions have implemented an independent curriculum, and teachers have also applied various learning methods and models that vary and utilize technology, for example in explaining material teachers have used PowerPoint Presentation (PTT), not only that teachers also often use learning videos through youtube shows using projectors, Facilities, and infrastructure have supported teaching and learning activities such as the availability of internet networks, have Chromebooks that can be used by students. However, when the teacher evaluates teacher learning and does not take advantage of existing technological facilities, the teacher only uses assessment instruments in writing with paper media, especially during the learning of science material Indonesian Geographic Conditions. So that it affects the process and learning outcomes of students among them students are less motivated and not excited when doing summative as a teacher evaluation in learning, In addition, data was obtained that 65% of students have not been able to achieve the Learning Objectives Achievement Criteria (KKTP), the average test score obtained only reached 58.07.

2. Development of an assessment instrument for Indonesia's Geographical Conditions of Wordwall-based elementary science lessons in the form of Modipaskogo E-Book

Development of research instruments using the research design of the research and Development (R &; D) ADDIE model which consists of stages:

a. Stage Analysis

At this stage, researchers analyze student needs in the learning process, especially science lessons on Indonesian Geographical Conditions, analysis of the availability of learning facilities in the school and home environment based on the results of

initial observations, researchers also conduct interviews to obtain these data and document what is seen heard when conducting the analysis. In the first stage after the researcher made initial observations based on notes that students looked less motivated and not excited when doing summative, researchers documented the results of summative assessments of science lessons (attached to this study), after the researcher conducted interviews with several students directly and the results of the interviews could be concluded that students were very happy if the assessment was carried out using technology For example, using a mobile phone, Chromebook or laptop. In addition, the teacher also conducted an interview with the principal, and grade 5 teachers of SDN Kartini 1, 2, and 4 conclusions from the interview, they strongly supported the assessment was carried out online by utilizing technology, advice, and infrastructure-owned by the school in the hope that student learning outcomes could increase and students would be more enthusiastic in learning.

In the second stage, researchers analyzed the material on Indonesian Geographical Conditions and summative problems carried out by students with Learning Outcomes (CP) and Learning Objectives Flow (ATP). Based on the analysis conducted by researchers, innovation is needed in learning assessment, especially fun science lessons, motivating student learning, one of which is by using Wordwall-based assessment instruments. Accessible to students, the learning process is more interesting and increases the spirit of learning. For teachers, it can make it easier for teachers to analyze assessment results and provide feedback to students because Wordwall-based assessment in addition to the results of direct score acquisition can be displayed, and the results of the analysis of each question item can be downloaded by the teacher and fully captured making it easier for teachers.

b. Design Stage

In this stage, researchers compile Wordwall-based assessment instruments in the form of question material, outlined in a grid of questions, write draft questions and answer keys as many as 30 questions consisting of 10 multiple-choice questions, 10 fill-ins, and 10 matchmaking questions, question materials in accordance with Learning Outcomes and Learning Objectives Flow (attached to this study). After creating a Wordwall-based assessment application, researchers integrated the Wodwall application in the form of Modipaskogo E-Book (Science Module of Indonesian Geographical Conditions).

1) Wordwall-based assessment instrument design

Making Wordwall-based assessment instruments with the following stages:

a) Open the *Wordwall.net website* and a display will appear as shown below:

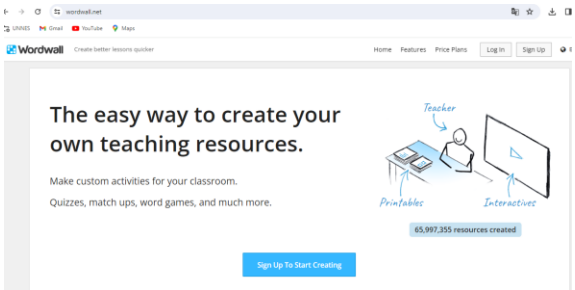

Figure 1 Wordwall Application Initial View

b) Click Sign Up, then the figure below will appear:

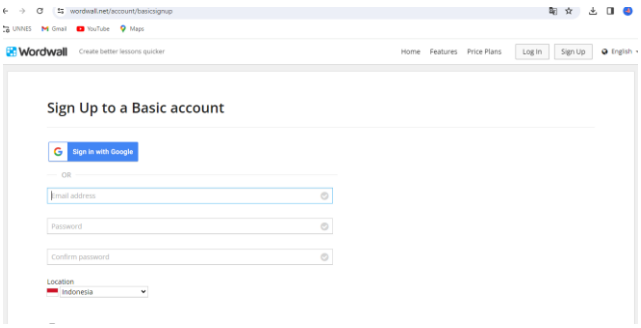

Figure 2 Account Confirmation Wordwall Application Display

Click Sign in with Google or create a new account, select the Gmail account you use.

c) After logging in through your Gmail account, then click Create Your First Activity Now, with the image below:

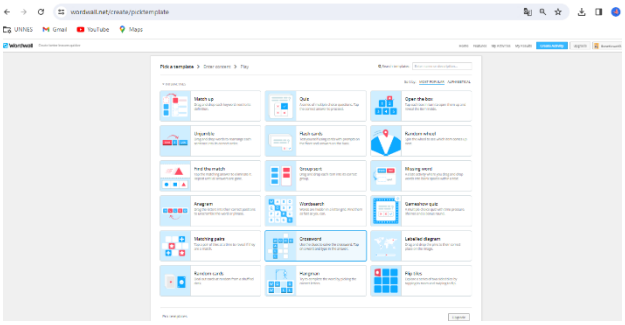

Figure 3 Wordwall *App Activity View*

There are eighteen choices of *Wordall template* types, as shown below:

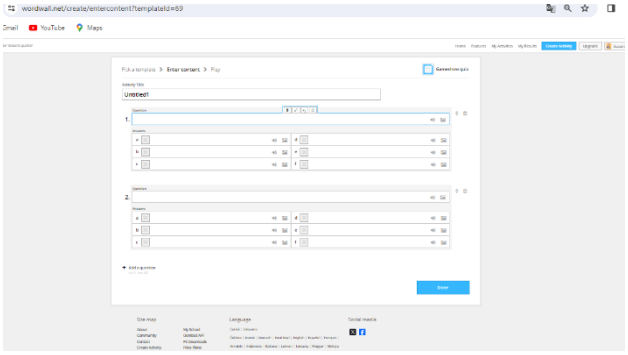

Figure 4 Wordwall Application Template Display

In this case, the author uses Gameshow Quiz, Crossword, and Labelled Diagram templates.

d) Select the Gameshow quiz, and a display appears as shown below:

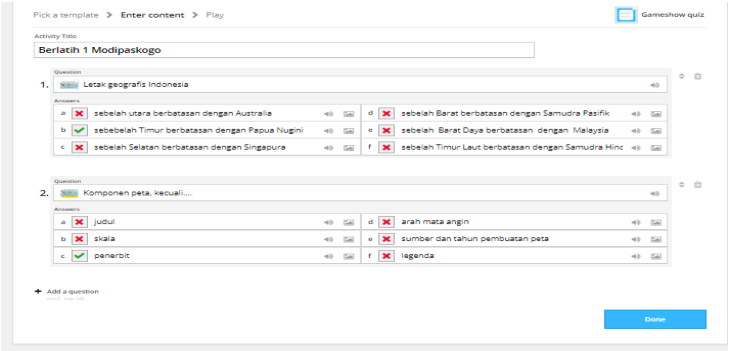

Figure 5 Display of *Wordwall Application* for Making Question Script

Fill in untitled 1 for the quiz title "Practice 1 Modipaskogo", then type the question in question *column 1 for question number 1 and the answer choices are from a, b, c, d, e, and f, click the image sign to insert a picture or photo, to add the next question click the + Add a question sign. In this study, researchers wrote ten question numbers on the* GamesHow Quiz type.

e) Click the checkmark for the correct answer

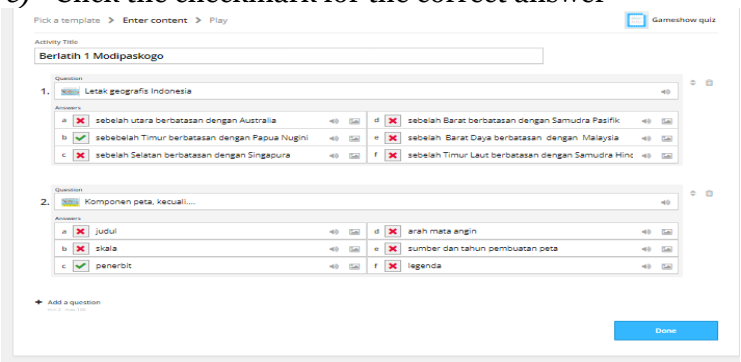

Figure 6 Display of *Wordwall Application* for Making Question Scripts

f) Click the +Add a question sign for the next question:

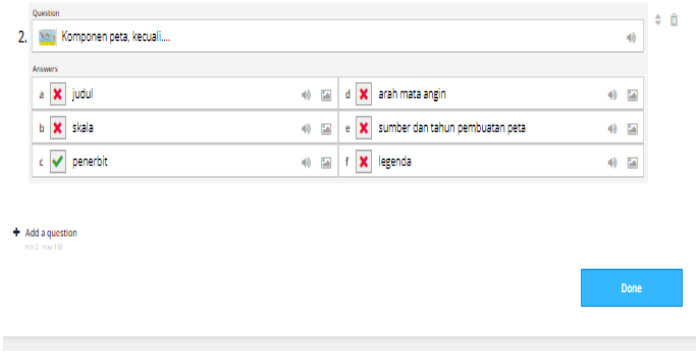

Figure 7 Wordwall Application Display for Question Script

g) When you finish typing the question to number ten, click the words Done.

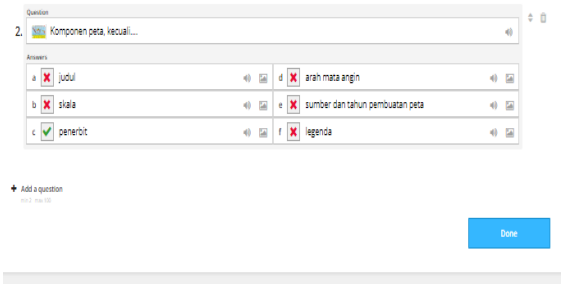

Figure 8 Display of *Wordwall Application* for Making Question Scripts

h) Then after clicking done, a display will appear as shown below:

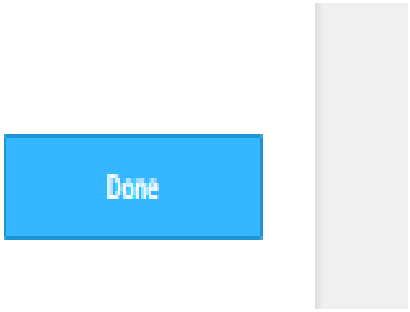

Figure 9 Gameshow view of *Wordwall application*

i) After that click settings (settings) at the bottom of the left, here is a picture of the settings display:

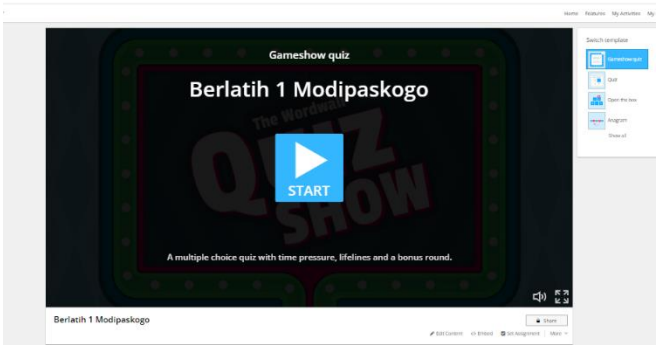

Figure 10 Wordwall App Quiz Settings Display

Figure 11 Wordwall App Quiz Settings Display

j) After setting up the quiz, then you can click share to students.

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k) After clicking share, the image will appear as below, then click publish.

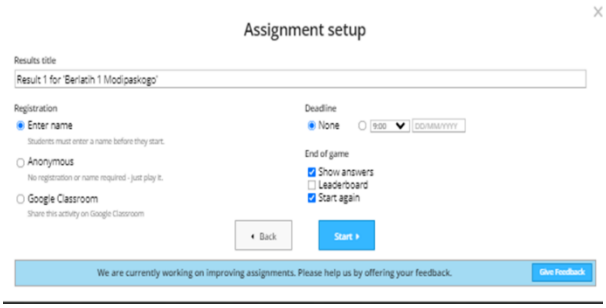

Figure 12 Wordwall App Quiz Settings Display

l) After clicking Pubish, the image will appear as below, then we set the settings, and after that click Star.

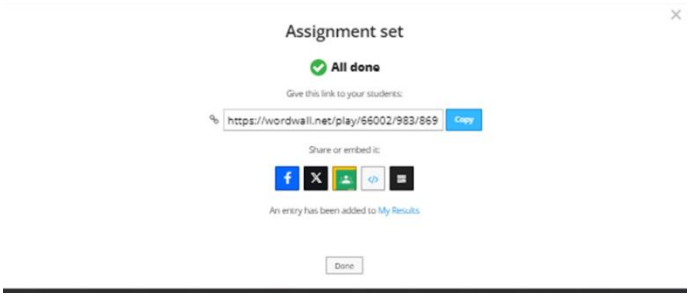

Figure 13 Wordwall App Quiz Settings Display

m) Then a display will appear as shown below, copy link means the link is ready to be shared with students.

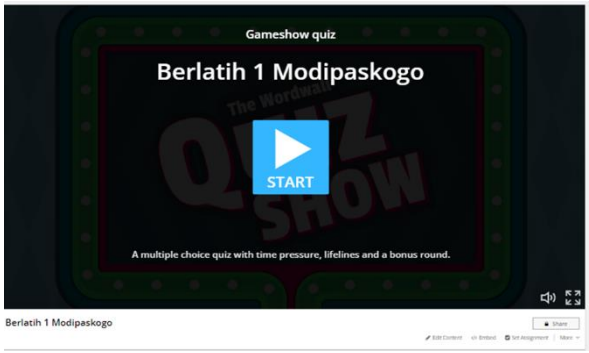

Figure 14 Wordwall *Application Link Display*

The results of making Wordwall applications for IPAS assessment in this study consist of three types of Wordwall, first *Gameshow Quiz, Crossword,* and *Labelled Diagram* as follows:

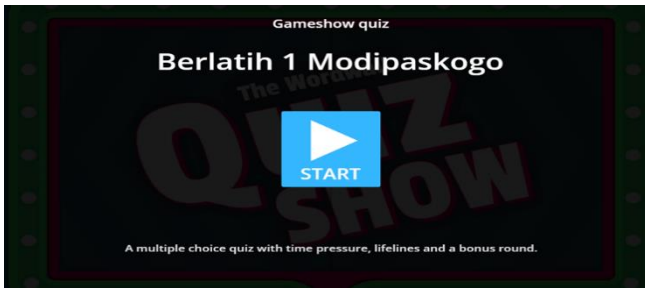

Figure 15 *Gameshow Quiz* Initial Look Wordwall *App*

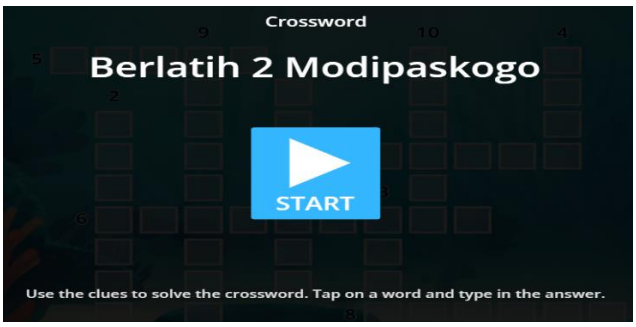

Figure 16 Initial View of *Crossword Type* Wordwall *Application*

c. Modiapskogo E-Book Design

The stages of making Modipaskogo E-Book include:

a) create a Modopaskogo E-Book cover

Figure 17 Modipaskogo E-Book Cover

Create module content consisting of the initial part consisting of the Preface, Learning Outcomes (CP), Learning Objectives, table of contents, science material consisting of Indonesian Regional Characteristics, Biologically Rich Indonesia, Natural Rich Indonesia, Let's Practice, and Bibliography.

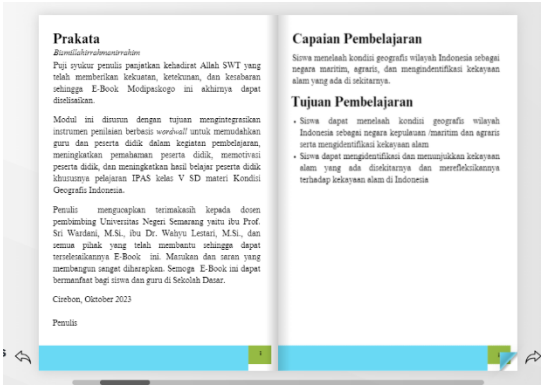

Figure 18 Preface, Achievements, and Objectives of Modipaskogo E-Book

Figure 19 Table of Contents and Modipaskogo E-Book Materials

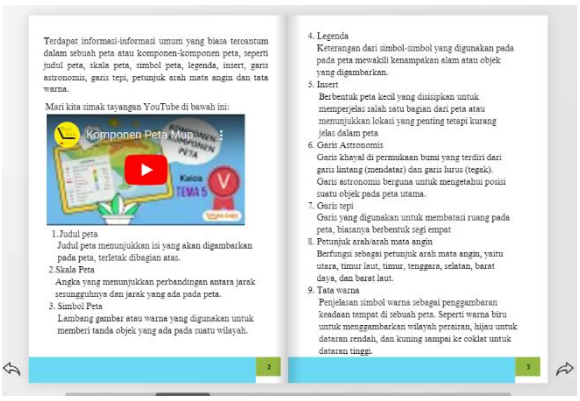

Figure 20 Modipaskogo E-Book Material

Figure 21 Modipaskogo E-Book Material

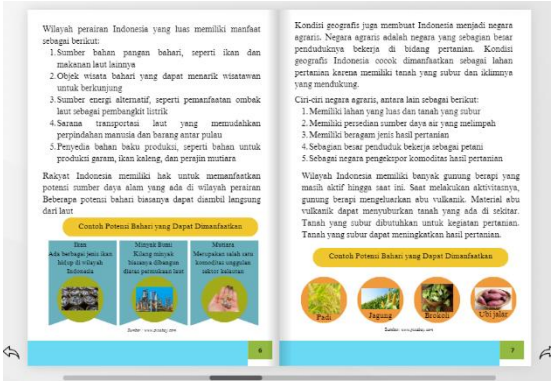

Figure 22 Modipaskogo E-Book Material

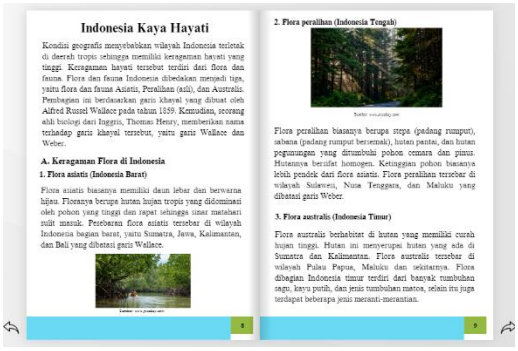

Figure 23 Modipaskogo E-Book Material

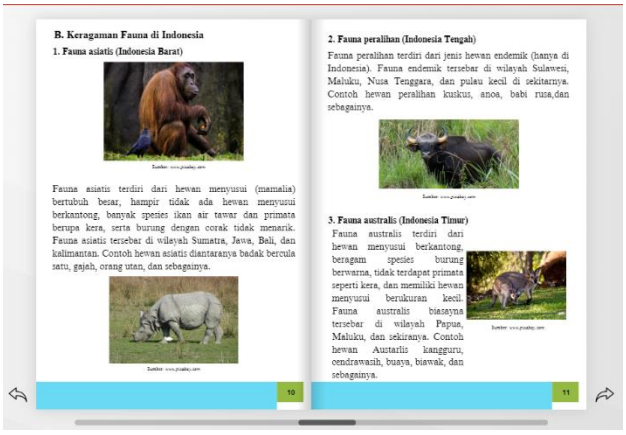

Figure 24 Modipaskogo E-Book Material

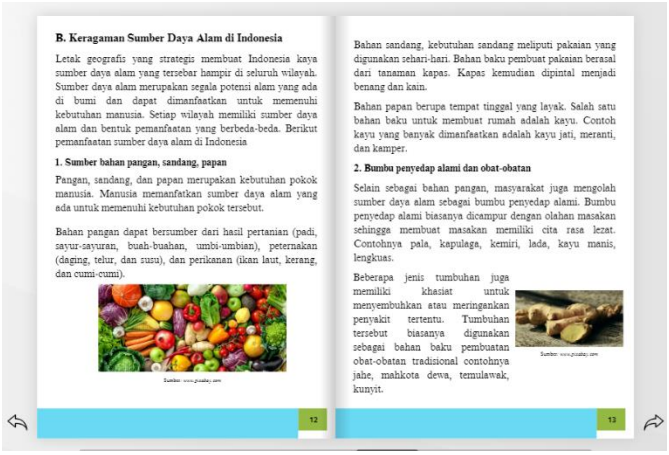

Figure 25 Modipaskogo E-Book Material

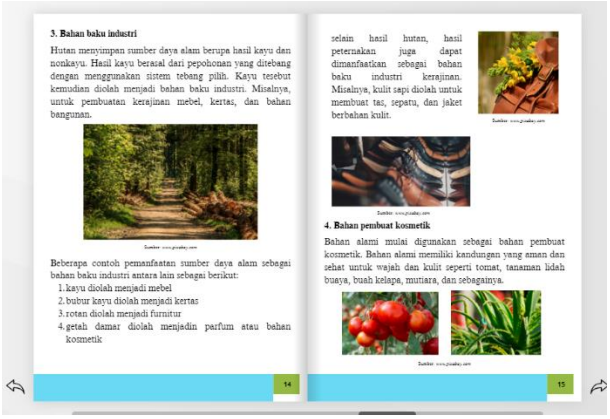

Figure 26 Modipaskogo E-Book Material

Figure 27 Modipaskogo E-Book Material

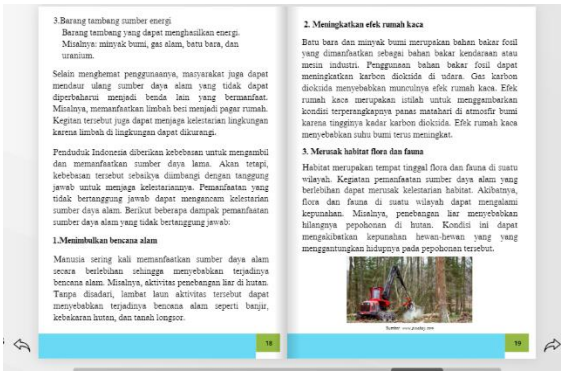

Figure 28 Modipaskogo E-Book Material

Figure 29 Modipaskogo E-Book Material

b) Create a module the closing section consists of a bibliography

Figure 30 Modipaskogo E-Book Bibliography

d. *Development Steps*

At this stage of development, the products that have been produced are Wordwall-based assessment instruments packaged in the form of Modipaskogo *E-Books* assessed by material experts, media experts, evaluation experts, and practitioner experts, then the revised product results are tested on a small scale to grade V students of SDN Kartini 5. After small-scale testing, the product again passed the validation and revision stages according to the suggestions and comments of the second expert validator, the results of the second product improvement were then tested on a large scale. Large-scale trials were tested on grade V students of SDN Kartini 1, 2 and SDN Kartini 4. In addition, to find out the practicality of the product was tested on class teachers in cluster 1 of the Cirebon City Attorney District through workshop activities. Validity test result data from the product developed, validity test result data using validity test questionnaires by validators. The validator in this study is Prof. Dr. Sri Wardani, M.Si, the evaluation expert is Dr. Wahyu Lestari, M.Pd, the media expert is Saefurrokhman, S.Pd, M.Pd, and the practice is Maria Helena Litta Yuniarti, S.Si., M.Pd. The process of collecting validity test data is carried out separately between one validator and another validator. Quantitative data is in the form of assessment scores of validation results while qualitative data is in the form of comments and suggestions from validators which are used as the basis for revision. Data on the results of the effectiveness test were obtained from the summative value of science lessons on Indonesian Geographical Conditions before using the product and after using the product with a class V sample of SDN Kartini 5 totaling 26 students. Data on the results of the practicality test were obtained from the results of questionnaires distributed to students in four classes, namely grade V SDN Kartini 1, 2, 4, and SDN Kartini 5, and to class teachers in cluster 1 of the District Attorney General as many as 30 teachers.

e. Implementation Steps

At the application stage, this research was tested on a small scale and large scale, tested on grade V students of SDN Kartini 1, 2, 4, and 5, totaling 116

students, disseminated through class teacher workshops in cluster 1 of the Cirebon City Attorney District, totaling 30 teachers. Large-scale trials were carried out on students of grade V, SDN Kartini 1, Kartini 2, and SDN Kartini 4 at classroom V of SDN Kartini 5 on Wednesday, October 18, 2023, alternately for each school to make it easier for students to test using Wordwall using Chromebooks owned by SDN Kartini V. Based on observations made by researchers, it can be seen that students are so enthusiastic, enthusiastic, and motivated to learn and evaluate science lessons in Indonesian Geographic Conditions. After the students filled out the questionnaire, researchers conducted interviews with their respective class teachers and it could be concluded that teachers were happy to see directly their students were enthusiastic about participating in learning even the teachers are grateful and grateful for their students to experience the first to learn to do Wordwall-based evaluations integrated into the E-Book. The implementation of the Practicality Test and dissemination of the program through the Workshop activity was held on Wednesday, November 1, 2023, attended by class teachers in cluster 1 of the Cirebon City Attorney District. The stages carried out by researchers during the workshop include conveying objectives, explaining products, product trials, questions and answers, and tutorials on making Wordwall-based assessment instruments. Then the teachers were given questionnaires to find out the teachers' responses to the products developed. The following is an overview of the implementation of filling out the teacher response questionnaire:

f. Evaluation

At the evaluation stage, researchers assess as a whole, product evaluation is carried out based on the results of analysis, planning, and product development to determine the suitability of the product with the purpose of forming the product. As a result of expert suggestions and comments, researchers give feedback to improve the products developed.

Development of assessment instruments for Indonesian Geographical Conditions of Wordwall-based elementary science lessons in the form of a valid Modipaskogo E-Book

Based on the assessment given by expert validators of material, media, and evaluation using validation questionnaires, then the results of the assessment are processed based on the validity formula Aiken's V the results indicate that the development of Wordwall-based IPAS assessment instruments for elementary schools is declared valid, this is based on the data obtained in the table below:

Table 1 Recap of Expert Validation Results

No	Validation		Validation	Category
1.	Material Expert	Stage 1	0,78	Medium validation
		Stage 2	0,90	High validation
2	Media Expert	Stage 1	0,71	Medium validation
		Stage 2	0,95	High validation
3	Evaluation Expert	Stage 1	0,78	Medium validation
		Stage 2	0,96	High validation
4	Practitioner	Stage 1	0,85	High validation
		Stage 2	0,97	High validation
	Total		**6,90**	

Average	**0,86**	High validation

Development of assessment instruments for Indonesian Geographical Conditions of Wordwall-based elementary science lessons in the form of *a reliable Modipaskogo* E-Book

Based on the question instrument made by Wordwall-based researchers *and* tested on a small scale, processed using the Alfa Cronbach reliability *coefficient*, it was declared that the instrument was valid and reliable based on data from 30 questions that were processed 100% valid and from the results of the scores obtained by 26 students who were processed obtained a number of 0.730 which means that the question is reliable.

Development of assessment instruments for Indonesia's Geographical Conditions content of science lessons at SD Bebasis *Wordwall* in the form of an *effective Modipaskogo* E-Book

Based on *the pretest and posttest* summative question values carried out by grade V students of SDN Kartini V before and when using the product, as many as 26 students were processed using t-test analysis techniques and *N Gain* tests using SPSS22, a number of 0.79 was obtained so that it could be said that the Wordwall-based assessment instrument *was* of high effectiveness or very effective.

Development of assessment instruments for Indonesia's Geographical Conditions content of science lessons at SD's Wordwall-based elementary school in the form of *a practical Modipaskogo* E-Book

Based on the questionnaire distributed to class V students in as many as four schools totaling 116 students and class teachers in cluster 1 of the Kecmatan Kejaksan as many as 30 teachers from the responses of students and teachers were processed using a percentage formula declared practical, this was obtained based on data obtained from the table below:

Table 2 Recap of the Practicality of Student and Teacher Responses

No.	Response	Practicality	Information
1.	Learners	98%	Very Practical
2.	Teacher	98%	Very Practical
	Average	98%	Very Practical

Conclusion

The development of a Wordwall-Based Indonesian Geographical Condition Assessment Instrument in the Modipaskogo E-Book for Elementary School Students has been developed using the Research and Development (R&D) research method with the ADDIE research model consisting of analysis, design, development, implementation, and evaluation can be concluded to be valid, reliable, very effective and very practical to use. Based on the validity test conducted by the researcher, the average value of validity obtained from material experts, media, evaluations, and practitioners is 0.86, indicating a high level of validity. Based on reliable tests conducted based on the instrument made reaching 0.73, it shows the instrument of the realistic question. Based on the results of the pretest and posttest carried out by students obtained 0.79, which shows a very high level of effectiveness, and based on the responses of students and teachers obtained a percentage of 98%, it shows that the Wordwall-based assessment instrument in the form of Modipskogo E-Book is very practical. Wordwall-based assessment instruments in Modipaskogo E-Book are very valid, reliable, effective, and practical, besides that, they can foster students' enthusiasm and motivation to learn science in elementary schools.

Suggestion

Suggestions that can be conveyed by researchers related to the development of Wordwall-based assessment instruments in the Modipaskogo E-Book include:

1. Wordwall-based assessment instruments can be applied by teachers to the content of science lessons on different question materials.
2. Wordwall-based assessment instruments are very well applied to students because they can foster enthusiasm and motivation in science learning.
3. Wordwall-based assessment instruments are very effective for students to use because they can improve learning outcomes.
4. Wordwall-based assessment instruments are very practical for students and teachers to use.

References

Aidah, N., & Nurafni, N. (2022). Analisis Penggunaan Aplikasi Wordwall Pada Pembelajaran Ipa Kelas Iv Di Sdn Ciracas 05 Pagi. *Pionir: Jurnal Pendidikan*, *11*(2), 161–174. https://doi.org/10.22373/pjp.v11i2.14133

Anggraini, D. L., Yulianti, M., Faizah, S. N., Putri, A., & Pandiangan, B. (2022). Peran Guru dalam Mengembangkan Kurikulum Merdeka. *Jurnal Ilmu Pendidikan Dan Sosial (JIPSI)*, *1*(3), 2829–2723.

Gandasari, P., & Pramudiani, P. (2021). Pengaruh Aplikasi Wordwall terhadap Motivasi Belajar IPA Siswa di Sekolah Dasar. In *Edukatif : Jurnal Ilmu Pendidikan* (Vol. 3, Issue 6, pp. 3689–3696). https://doi.org/10.31004/edukatif.v3i6.1079

Hariono, I., Wiryokusumo, I., & Fathirul, A. (2021). Pengembangan Instrumen Penilaian Kognitif Berbasis Google Form Pelajaran Matematika. *Edcomtech Jurnal Kajian Teknologi Pendidikan*, *6*(1), 57–68. https://doi.org/10.17977/um039v6i12021p057

Imanulhaq, R., & Pratowo, A. (2022). Edugame Wordwall : Inovasi Pembelajaran Matematika di Madrasah Ibtidaiyah. *Jurnal Pedagogos : Jurnal Pendidikan STKIP Bima*, *4*(1), 33–41.

Khofifah Indra Sukma, & Trisni Handayani. (2022). Pengaruh Penggunaan Media Interaktif Berbasis Wordwall Quiz Terhadap Hasil Belajar Ipa Di Sekolah Dasar. *Jurnal Cakrawala Pendas*, *8*(4), 1020–1028. https://doi.org/10.31949/jcp.v8i4.2767

Lubis, A. P., & Nuriadin, I. (2022). Efektivitas Aplikasi Wordwall untuk Meningkatkan Hasil Belajar Siswa dalam Pembelajaran Matematika Sekolah Dasar. In *Jurnal Basicedu* (Vol. 6, Issue 4, pp. 6884–6892). https://doi.org/10.31004/basicedu.v6i4.3400

Wildan, W. (2017). Pelaksanaan Penilaian Autentik Aspek Pengetahuan, Sikap Dan Keterampilan Di Sekolah Atau Madrasah. *Jurnal Tatsqif*, *15*(2), 131–153. https://doi.org/10.20414/jtq.v15i2.3