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Development of "*Tikrar* Space" multimedia based on drill and practice for Arabic vocabulary learning

Siti Nurhidayah *, Muhibuddin Fadhli, Saida Ulfa
Universitas Negeri Malang, Indonesia.
***** Corresponding Author. E-mail: siti.nurhidayah.2401218@students.um.ac.id

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ABSTRACT

Multimedia drill and practice is a learning method that teaches skills through structured exercises to students by integrating various types of media, such as text, images, sound, and video. It can be applied in learning Arabic, especially to increase interest in learning and understanding or also called mufrodat on the subject matter of "اعضاء الجسم" (Members of the Body) Class V which is located at Global Islamic Elementary School. This study involved 20 students as the subject of this development research is to produce products and determine the validity of a multimedia drill and practice named "Tikrar Space". This research was conducted through the stages of analysis (needs analysis, task analysis, and learning analysis), design (objectives and assessments, learning strategies, and selection of delivery systems), development (material drafts, media production, and formative evaluation), implementation, and summative evaluation according to the Seels and Glasgow development model. The validation test results showed that the material expert validation resulted in a percentage of 95% and the media expert validation resulted in a percentage of 98%. Then, the results of student trials using multimedia amounted to 93%. Based on these results, it is concluded that this product is valid and can be used to interact in learning. Future research is suggested to integrate the latest technology with approaches such as gamification, adaptive learning, and collaborative learning, as well as the utilization of Augmented Reality and Virtual Reality to increase the effectiveness and interactivity of learning.

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INTRODUCTION

The modern era of education offers many changes, one of which is technology, which plays a crucial role in providing benefits and opportunities for students and educators. Technology has changed the learning environment to be interactive and adaptive, thus increasing knowledge and the ability to retain information (Rukmana et al., 2023). Technology has been widely integrated into various subjects, providing learning experiences that can be tailored to students' individual needs and preferences. Thus, technology is an option for improving learning outcomes and overall academic performance (Wekerle et al., 2022).

One of these subjects is Arabic. Arabic proficiency depends on vocabulary acquisition. If a person can master vocabulary, it reflects the level of language ability (Safitri, 2023). The purpose of

learning Arabic is so that students can pronounce vocabulary *(mufrodat)* according to the correct *makhraj* and then practice in the form of "جملة" or sentences (Hakim et al., 2019). The vocabulary acquisition process can be done in various ways which include social interaction, reading, listening, and repeated practice.

It needs to be addressed by applying appropriate methods to improve the quality of teacher and student interactions, empowerment of facilities, and learning components (Wijaksono, 2020). Repetitive exercises such as the drill and practice method can be an alternative in vocabulary acquisition, considering the cycles applied according to needs. The cycle includes an introduction section, select item, question and response, judge response, feedback, and closing (Alessi & Trollip, 2001). The concept of drill and practice is a learning approach that emphasizes repeated practice to strengthen understanding and skills regarding vocabulary in a language. In addition, drills and practice accommodate students in developing motor skills that are usually used in math, science, and language classes.

The results of observations and interviews with homeroom teacher V show that alternative learning media are needed to increase students' interest in learning, especially in understanding Arabic lessons on the material "أعضاء الجسم" (Body Members). This is because students are bored and easily understand less varied teaching methods. Although the school has facilities in the form of laptops and LCD projectors, their use is not optimal. Teachers realize that the current independent curriculum provides flexibility to choose various learning tools or open materials, but unfortunately, teachers still have difficulty integrating material into computer-based media. In addition, the use of book packages and teacher-centered approaches tends to be more dominant, which results in lower student satisfaction. Despite efforts to utilize learning platforms, students still have difficulty memorizing this is in line with the opinion of Wijaksono (2020) who states that Arabic has become a learning as well as a language icon at the Islamic-based school or madrasah level, but the results of its application are not optimal.

Research conducted by Jamroh & Nisa (2021) shows that inappropriate learning methods lead to a lack of student motivation and the perception that learning Arabic is difficult. This is due to the lack of teacher creativity in creating a fun and interesting learning experience for students. In this regard, the use of multimedia technology in learning can be an effective solution to overcome these obstacles. Multimedia makes learning more interesting and interactive and helps students apply Arabic in contexts relevant to everyday life, as shown in the research by Thoyib et al., (2024) regarding the integration of multimedia technology in Arabic language learning. Therefore, effective learning strategies and technology are needed to help learning activities become more effective and enjoyable.

According to other studies, the purpose of Arabic language learning is that students can pronounce vocabulary *(mufrodat)* according to the correct *makhraj* and then practice in the form of "جملة" or sentences (Hakim et al., 2019). From there, researchers unite the drill and practice method with Arabic language learning which, as to the statement of previous research, language learning is suitable for applying this method (Gunawan et al., 2020; Lestari et al., 2020; Mualimah et al., 2019). Likewise, in the development of multimedia drills and practice as a form of technology that presents multiple choice exercises, it is feasible to apply in foreign language learning. It facilitates individual interests (Sari et al., 2021). Thus, students are psychologically able to foster interest through appropriate methods. Using technology through interesting media can be a driving force to motivate students to learn foreign languages, especially those that are considered difficult.

The application of technology-based drills and practice in learning offers several significant advantages. The advantage is that it has the capability to help provide quick feedback regarding the correctness of the answers chosen by students. It not only encourages students to try to answer correctly but also strengthens the connection between stimulus and response. In addition, this method can optimize student engagement in the learning process, creating experiences that encourage active participation and deeper understanding (Kurniawan et al., 2019).

In the previous development, researchers found that multimedia was integrated with the drill and practice method through interactive quizzes, making it a learning medium for students (Mualimah et al., 2019). Multimedia is a computer technology application that can process, combine,

and display various types of files, including text, audio, video, images, and animation, with media and connections that allow users to interact and communicate with each other (Limbong & Simarmata, 2020). In the scope of learning, multimedia has a wide variety such as multimedia presentations, interactive, hypermedia, drill and practice, and tutorials. The drill and practice method is a learning technique that involves repeated practice and practice to improve skills and dexterity through material that has been learned (Nursehah & Rahmadini, 2021). Therefore, drill and practice-based multimedia is an interesting choice in combining the diversity of multimedia elements with learning methods that focus on repetitive practice, creating an interactive and effective learning environment.

In designing multimedia, it is necessary to pay attention to various principles. According to Mayer (2001), there are twelve multimedia principles based on cognitive science and information processing, which include coherence, signaling, redundancy, spatial continuity, time continuity, segmentation, pre-training, modality, multimedia, personalization, sound, and image. These principles have been applied in the development of learning media. For example, research by Gunawan et al., (2020) applied these principles to the development of multimedia drill and practice, which proved that the use of multimedia by paying attention to these principles can create media that is suitable for use to improve student understanding. In line with this, the researcher explores and develops multimedia drill and practice as a complex and effective media, including images, animations, and words that allow dynamic interaction between users and applications through navigation buttons.

In developing an interesting and appropriate learning multimedia, of course, an application is needed to create the multimedia, one of the applications chosen is PowerPoint. In general, PowerPoint is often considered a presentation tool with a one-way method, where educators present material to students. This means that students only become listeners and observers (Widyardi et al., 2023). However, by utilizing hyperlinks and animation features, PowerPoint-based multimedia interactivity can be adapted using the drill and practice method. This is accommodated through interactive slide design, interactive exercises or quizzes, animation as concept visualization, and instant feedback. All of this is presented by utilizing the hyperlink/action feature to move slides, and animation/trigger is used to operate multimedia by clicking on objects as triggers (Mona, 2021).

Previously, there was also research related to the needs analysis of elementary school students (Zain & Pratiwi, 2021), the results of the questionnaire analysis found that students strongly agreed and supported the creation and development of interactive PowerPoint-based learning media. PowerPoint can include audio, video, animation, and quizzes accompanied by feedback so that users can interact with the program. In addition, interactive PowerPoint is classified as an intermediate level, because it allows manual control using navigation buttons. This is to the characteristics of media classification based on the level of interactivity proposed (Schwier &Misanchuk, 1993).

Departing from the needs analysis and some previous research, learning media in the form of multimedia drills and practice is suitable to be developed using PowerPoint because it is more practical and easily accessible using laptop/computer devices. This is by the facilities provided at Global Islamic Elementary School. The main focus of this multimedia development is on the integration of several types of media, such as text, images, graphics, and animations that are designed according to the attractiveness and interactive standards for students. So that it can foster student participation, learning more fun, and assist teachers in the implementation of teaching.

Therefore, this research not only shows the validity of the material and media from the experts but also shows the results of student trials in using multimedia in Arabic lessons. The selection of the material "أعضاء الجسم" (Members of the Body) in the development of the media, because it is one of the basic materials in the lesson in class V which provides a practical dimension to Arabic language learning. So that by using the drill and practice method in multimedia, students can directly associate the vocabulary with concrete objects that are realized in the form of visualization in the form of images and hone memory through repeated practice. This makes it easier for students to internalize vocabulary more effectively.

METHOD

This research and development procedure uses the Seels & Glasgow (1998) model. This development model extends the five basic steps of the ADDIE model with an Instructional Systems Design (ISD) model aimed at beginners (Seels & Glasgow, 1998). When compared to other models, this model emphasizes students' needs and preferences in the learning process and provides a strong framework for outlining the process through more specific steps (can be seen in Figure 1).

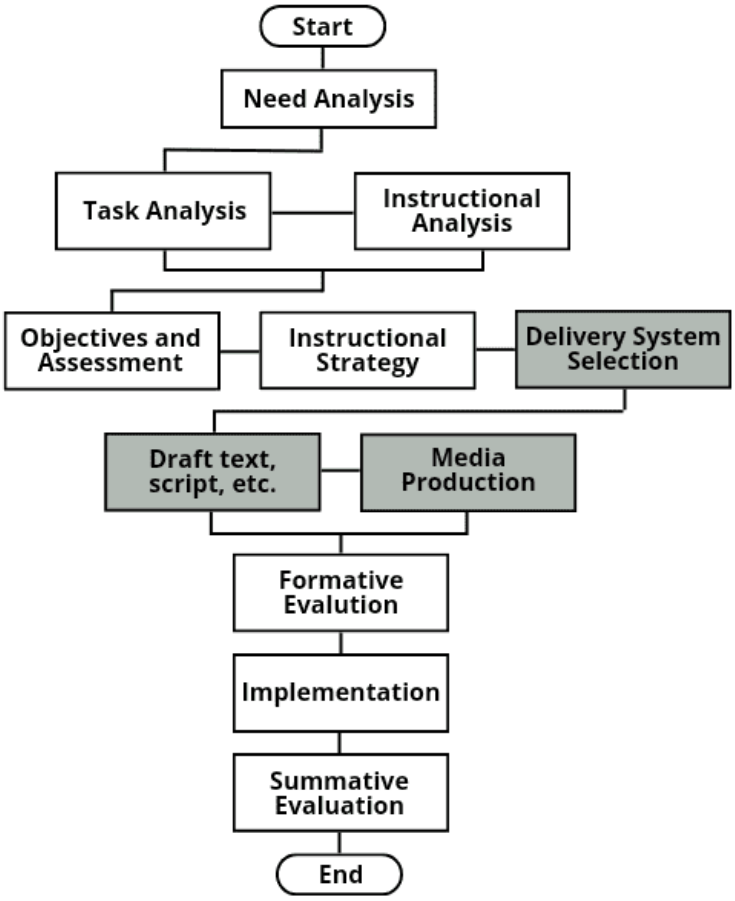

Figure 1. Seels & Glasgow's ISD Model

Figure 1 Seels and Glasgow start the analysis stage including needs analysis, task analysis, and instructional analysis. Needs analysis is used to determine the existing needs of the institution so that the solution produced later can meet the objectives. Task analysis involves identifying tasks and activities by reviewing indicators and learning objectives. Instructional analysis includes identifying the learning materials that must be delivered as well as the most effective methods to deliver those materials. The design stage should include learning and assessment objectives (developing assessment instruments), instructional strategies, and selection of delivery systems. The development stage includes draft materials, media production, and formative evaluation. The implementation stage involves testing the materials and media. Summative evaluation aims to help schools/teachers assess the overall impact of the media over a long period. However, in this study, summative evaluation was not conducted because the implementation was not used as a whole, but only a small-scale trial.

In this study, several types of questionnaires were used, namely expert validation questionnaires, material experts, and student response questionnaires. The validation questionnaire is used by researchers to collect data related to the validation of products that have been made. This questionnaire will be filled in by material experts and media experts. The use of validation questionnaires has the main objective of obtaining assessments, criticisms, or suggestions from experts regarding the products that have been developed by researchers. Furthermore, individual

trials were carried out by 5 people, a large group consisting of 10 students, and a small group consisting of 5 students. The instrument used is a closed questionnaire containing 10 items for material experts, 12 items for media experts, and 20 items for students as users. The questionnaire provided a column to provide comments in the form of suggestions on the multimedia developed by researchers. So, the data is generated in the form of quantitative and qualitative data.

Quantitative data was obtained from the assessment on the validation sheet and student response questionnaire using a Likert scale consisting of 4 answers, namely, SA (Strongly Agree), A (Agree), D (Disagree), and SD (Strongly Disagree) (Sugiyono, 2019). Furthermore, the data is processed to obtain the results of the level of validity of the multimedia drill and practice developed using the percentage formula in the form of dividing the number of assessment scores by the maximum number of scores, then multiplying by one hundred percent. The level of validity is known from the interpretation of the score in the form of numbers into a category. Meanwhile, qualitative data is obtained from comments in the form of criticism or suggestions given through validators.

Table 1. Level of Validity

No.	Category	Score Range (%)
1	Very Good	81% - 100%
2	Good	61% - 80%
3	Sufficient	41% - 60%
4	Less	21% - 40%
5	Very Less	0% - 20%

(Akbar, 2013)

In the media expert validation questionnaire, the aspects assessed are aspects of navigation or media operation, display aspects, media audio aspects, and benefit aspects. The material expert validation questionnaire consists of aspects of content feasibility, language aspects, and presentation aspects. The student response questionnaire includes aspects of appearance or presentation, aspects of operation, and aspects of user interaction and reaction. These activities are used to determine student responses to multimedia. Data analysis techniques contain how to interpret the data obtained and its relation to the problems and research objectives. For experimental research, it is not necessary to write down statistical formulas, but it is sufficient to state which test was used and the decision-making criteria. For qualitative research, researchers also need to describe the things that are done to ensure the validity and consistency of research results.

RESULTS AND DISCUSSION

Results

The results of this development are in the form of a multimedia drill and practice "*Tikrar* Space" which contains the material "Members of the Body" with the research subject being 20 fifth-grade students at Global Islamic Elementary School in Arabic language subjects. In its creation, the Canva application is used to produce a display design that contains elements such as images, icons, and backgrounds. After designing in Canva, the results were then downloaded in the form of PowerPoint format. PowerPoint is used so that the design elements that have been made before become interactive multimedia by utilizing hyperlink/action and animation/trigger features. Through these features, the resulting multimedia can be explored using navigation buttons and enriched with animation and audio.

The strategy developed in this multimedia is the use of interactive quizzes to practice vocabulary comprehension. Multimedia elements that include images and audio are applied to enrich the material and assist students in linking vocabulary with a more real context. The setting of difficulty level of the questions is adjusted to the level of material in the Arabic subject, namely *mufrodat* and *tarkib*, both of which contain ten questions each that will provide immediate feedback. The types of questions given are only wrong/right and are supported by moving images and animations. In addition, this multimedia has various features or menus such as sound, music, home, instructions, profile, information, and goals.

Figure 2. Home and Menu Display

Based on Figure 2, a home display with various buttons is presented, such as music, sound, instructions, profile, information, goals, and navigation buttons (back and close), as well as the title of the material to be studied. The button is used to make it easier for students to explore this multimedia. In addition, there are moving animations accompanied by musical accompaniment to increase students' interest in learning. In the menu display, there are categories of material (in the form of buttons) according to their level, namely *mufrodat* and *tarkib*. The purpose of presenting categories is so that students can choose exercises according to their level of difficulty.

Figure 3. Quiz

Based on Figure 3, the drill and practice method is applied through exercises/quizzes, where body members or movements are visualized using animations. Each slide is accompanied by several buttons. In addition, music with a play/pause button accompanies each exercise. Likewise, audio buttons make it easier for students to understand how to read Arabic vocabulary according to the rules. The drill and practice cycle in this media is that if students can answer the question correctly, they can move on to the next exercise, which is marked by feedback in the form of sound and animation "wrong" or "correct".

The product was developed and tested on experts and students using a Likert scale questionnaire consisting of 4 answers, namely, 4 (strongly agree), 3 (agree), 2 (disagree), and 1 (strongly disagree) (Paramita et al., 2022). Furthermore, for the validity quality criteria according to Akbar (2013), if the value is in the percentage range of 81% - 100% then it is included in the criteria very valid or feasible to use. The following is a diagram and table presentation of the results of validation data processing and trials for media experts, material experts, and students as research subjects.

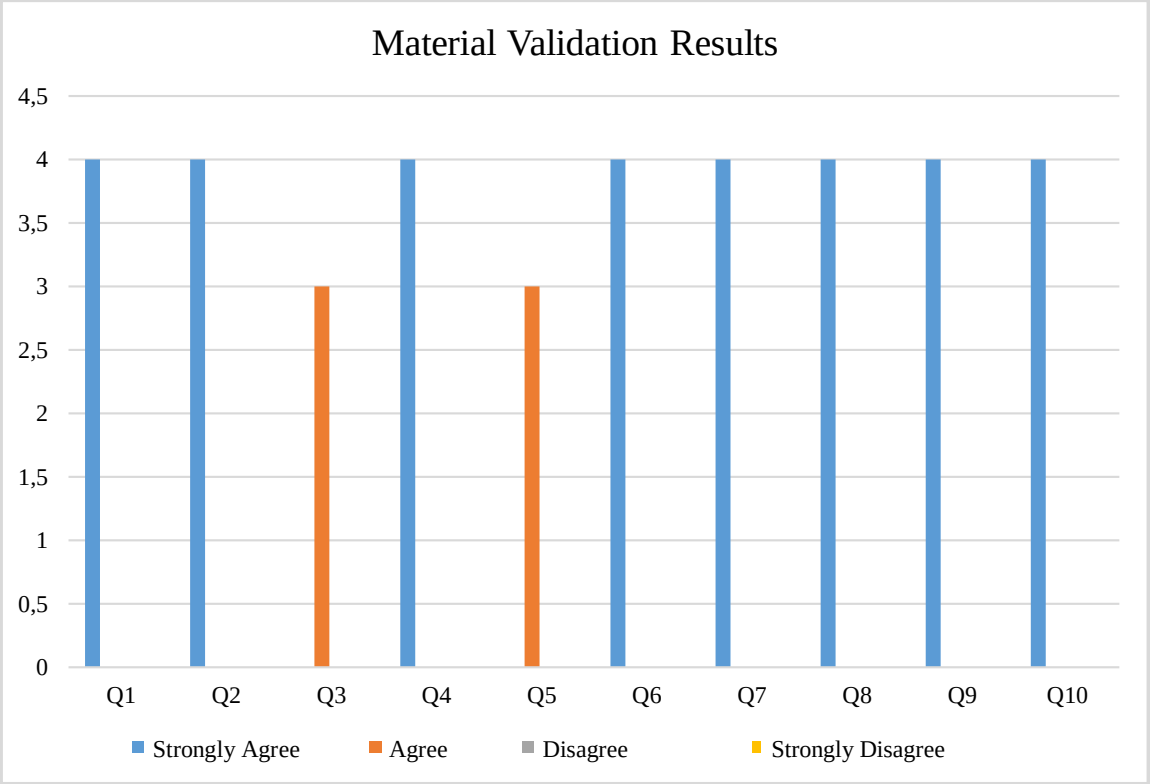

Figure 4. Diagram of Material Expert Validation Results

Figure 4 shows that the diagram of the material expert validation results using a scale of four on multimedia drill and practice, there are 8 out of 10 items that get a strongly agree scale, indicating a high level of approval from the material expert on various aspects (see Table 2). In addition, 2 items on the agreed scale, signaled positive acceptance but with a slightly lower level of agreement. These results reflect the success of multimedia in meeting the material standards and criteria and provide a positive picture of the quality and feasibility of the drill and practice multimedia product. The statements on the material expert validation instrument were adopted from the research of (Fajriah, 2015; Rofidah et al., 2020) with an expert providing the answers (see Table 2).

Table 2. Presentation of Data on Material Expert Validation Results

No.	Code	Indicator	X	X1	Percentage
A. Content Feasibility					
1.	Q1	The Suitability of the Material with the Basic Competencies, Indicators, and learning Objectives that Students must master	4	4	100%
2.	Q2	The Accuracy of the Material is in Accordance with the Level of Student Development	4	4	100%
3.	Q3	The Accuracy of the Concepts Presented is Easy for Students to Understand	3	4	75%
4.	Q4	The Accuracy of the Images is Easy for Students to Understand	4	4	100%
5.	Q5	Clarity of Instructions for Use	3	4	75%
B. Language					
6.	Q6	The Language used is the Rules of Indonesian and Arabic Writing	4	4	100%
7.	Q7	The Language used is Appropriate for the Students' Level of Thinking	4	4	100%
C. Presentation					
8.	Q8	The Material Presented is in Accordance with the Teaching Material	4	4	100%
9.	Q9	Suitability of Questions and Answers	4	4	100%

No.	Code	Indicator	X	X1	Percentage
10.	Q10	Appropriate Picture Presentation in Accordance with the Vocabulary	4	4	100%
Total			**38**	**40**	**95%**

The results of the material expert assessment (see Table 2) for quantitative data, canbe analyzed that out of 10 items, there are 8 items that have a percentage of 100% and 2 items with a percentage of 75%. Then, if totaled, the result is 95%. Based on the criteria set, it can be concluded that multimedia drills and practice Arabic language subjects meet the valid criteria and are suitable for use as learning media.

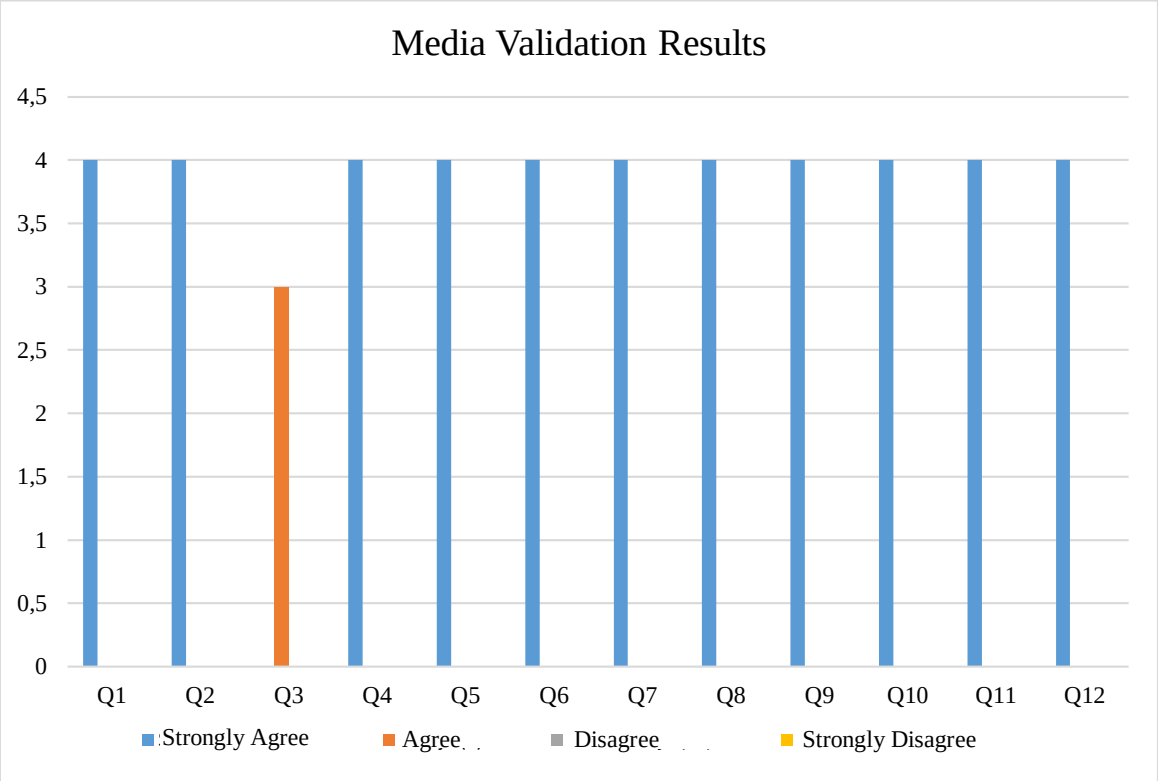

Figure 5. Diagram of Media Expert Validation Results

Figure 5 shows that the diagram of the media expert validation results, from a total of 12 items assessed, 11 items received a scale of "strongly agree," and 1 item obtained a scale of "agree". These results reflect the media expert's positive acceptance of the various aspects assessed in the multimedia. The high consistency of the assessment indicates that the material contained in the drill and practice multimedia is considered valid so it is suitable for use in learning Arabic. The material expert validation instrument (see Table 3) was adopted from the research of (Dwiqi et al., 2020; Zahra et al., 2021) with an expert providing the answers.

Table 3. Media Validation Instrument

No.	Code	Indicator	X	X1	Percentage
A. Navigation / Media Operation Aspect					
1.	Q1	Ease of Operation of Learning Media	4	4	100%
2.	Q2	Instructions for use Presented are Complete	4	4	100%
B. View					
3.	Q3	Accuracy of Button Placement	3	4	75%
4.	Q4	Attractiveness of Colors, Backgrounds, Images, and Audio	4	4	100%
5.	Q5	Readability of Text	4	4	100%
6.	Q6	Appropriateness of Background Color with Text Color	4	4	100%
7.	Q7	The Overall Program Provides a Pleasant Learning Atmosphere	4	4	100%

8.	Q8	Color Combination and Composition	4	4	100%
C. Presentation					
9.	Q9	Voice Clarity	4	4	100%
10.	Q10	Suitability of Voice with Material	4	4	100%
D. Benefits					
11.	Q11	The Overall Program Provides a Pleasant Learning Atmosphere	4	4	100%
12.	Q12	Clarify and Simplify Message Delivery	4	4	100%
Total			**47**	**48**	**98%**

From the results of the media expert assessment (see Table 3) for quantitative data, it can be analyzed that of the 12 items 11 items have a percentage of 100% and 1 item with a percentage of 75%. Then, the total of all indicators reaches 98% which indicates the quality of this media meets the standards. Based on the criteria set, it can be concluded that the drill and practice multimedia for Arabic language subjects meets the valid criteria and is suitable for use as learning media.

Student response is the student's response to the use of multimedia through filling out an attractiveness questionnaire. The pilot test was conducted with the same questionnaire indicators in various groups (large groups, individual groups, and small groups). Results from large groups can help understand how the product is received by many audiences; results from individual groups can help understand how individual responses to the use of the product; and results from small groups can help understand how social interaction affects the acceptance of the product as a learning medium. This can create more comprehensive results and provide a stronger basis for further development efforts or improvements to the already developed product. The following table presents the indicators of the attractiveness instrument as a form of student response (see Table 4), containing 20 items adopted from research (Dwiqi et al., 2020; Kartini & Putra, 2020; Zahra et al., 2021).

Table 4. Indicators of Attractiveness Instrument

No.	Code	Indicator
A. View		
1	Q1	I think the Content Content of this Multimedia is the Learning Material.
2	Q2	I like the Colors and Fonts used in this Multimedia because they are Attractive.
3	Q3	I think the Images, Backgrounds, and Animations in this Multimedia are Interesting.
4	Q4	I think the Audio/Sound Contained in this Multimedia Sounds Good
5	Q5	The Music in this Multimedia Makes me Feel More
6	Q6	I can Read and Understand the Text Clearly
7	Q7	I Enjoy Learning using this Multimedia.
8	Q8	I can Easily Understand the Language used in this Multimedia
B. Operation		
9	Q9	I can Easily Operate/use this Multimedia
10	Q10	Multimedia Design Makes me more Interested in Learning
11	Q11	The Instructions for using the Multimedia are Easy for me to Understand
12	Q12	I can Easily Navigate/Explore the Content of this Multimedia.
13	Q13	The Clarity of the Menu Helps me Focus on the Material I Want to Learn.
C. User Interaction and Reaction		
14	Q14	I Feel More Active in Learning by using this Multimedia
15	Q15	I don't Feel Bored or Saturated while using this Multimedia.
16	Q16	I feel that this Multimedia can Help me Understand the Material Better.
17	Q17	I Feel More Excited to Learn Through Multimedia.
18	Q18	I can Easily Memorize and Understand Learning Materials using this Multimedia.
19	Q19	I was Able to Concentrate while using this Multimedia
20	Q20	I think the Answers and Questions Contained in the Multimedia are Appropriate.

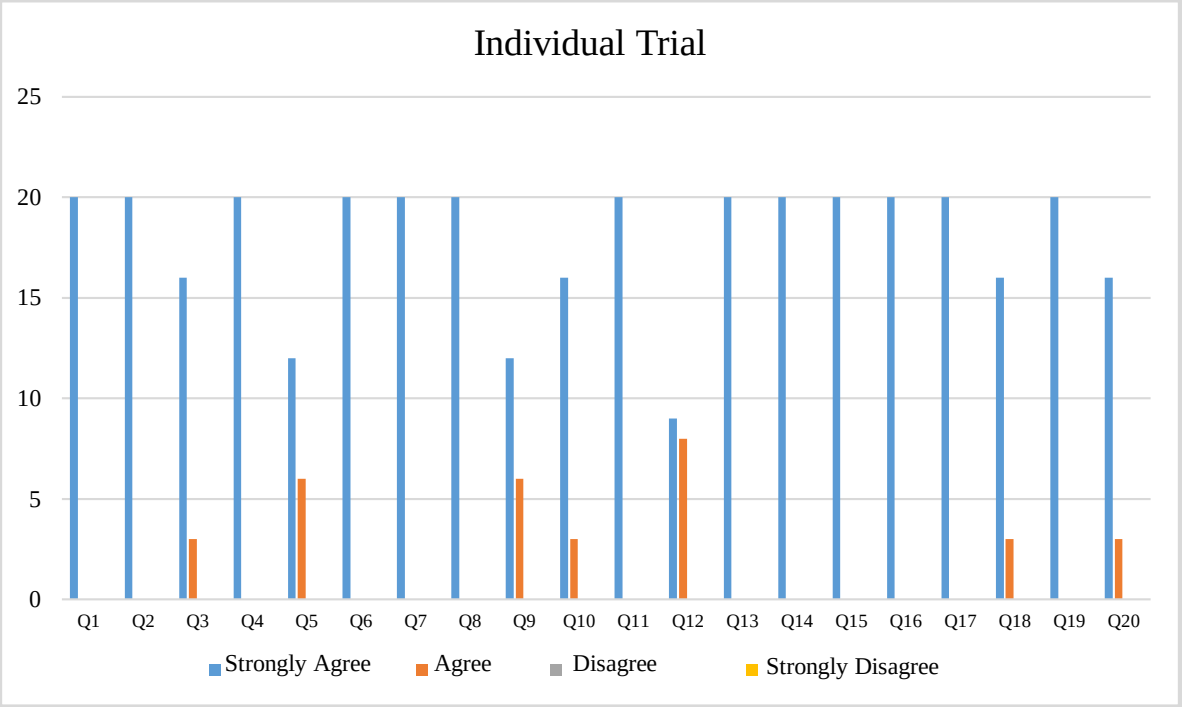

Figure 6. Diagram Individual of Trial Results

The results of the individual trial with the participation of 5 people and a four-point rating scale obtained a score of 97%. This is evidenced by Figure 6, which shows that in the diagram of the individual trial results, respondents gave more "strongly agree" ratings than "agree" ratings alone. This proves that the drill and practice multimedia "*Tikrar* Space" successfully attracts the interest of each individual and signifies its positive potential in supporting Arabic language learning.

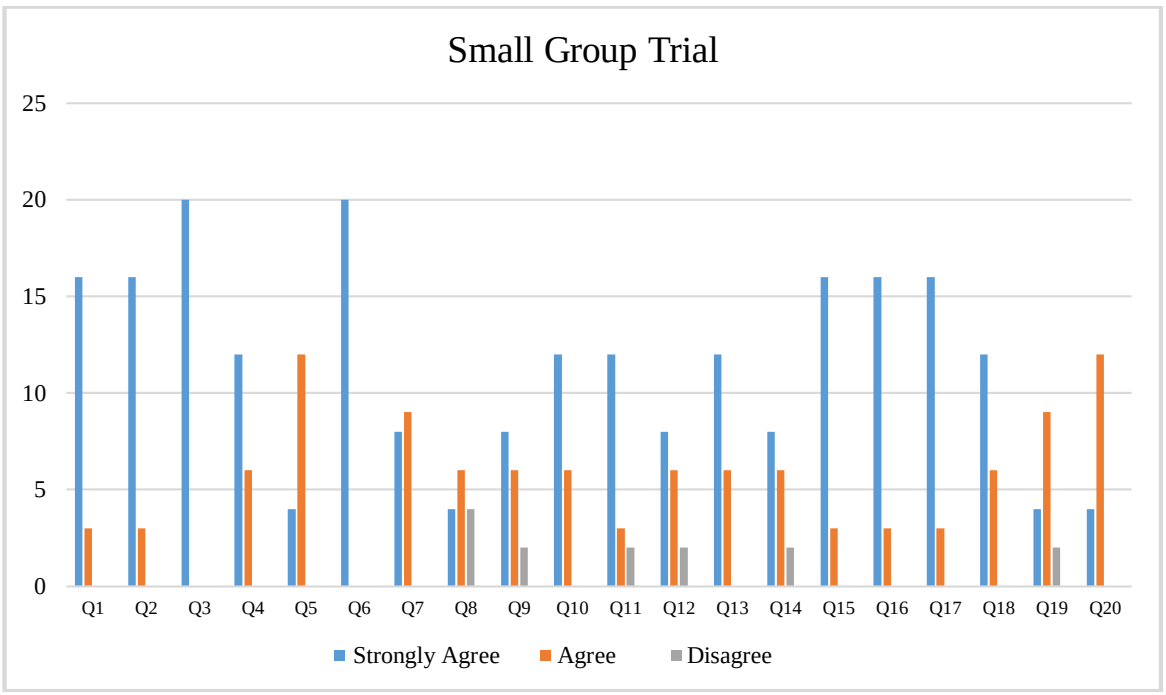

Figure 7. Diagram of Small Group Trial Results

The results of the small group trial obtained a percentage of 88%, it was based on responses from 5 respondents. Figure 7 shows that in the diagram of the trial results, respondents "strongly

agree" or "agree" get a significant number which shows a good level of acceptance of the multimedia. Although some statements get a "disagree" assessment, the number is relatively small. This proves that the drill and practice multimedia "*Tikrar* Space" is valid, with the results of trials conducted together or in groups.

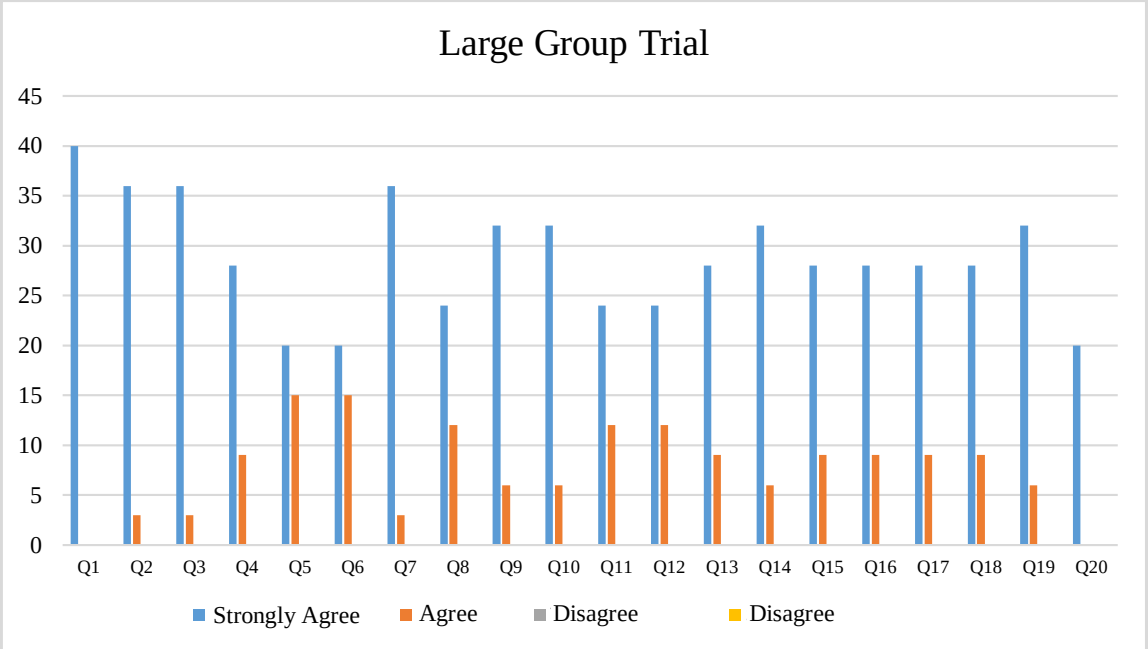

Figure 8. Diagram of Large Group Trial Results

The actions taken in the large group trial were almost the same as in the small group trial, except that the number of students in one large group consisted of 10 students. The results of the large group trial obtained a percentage of 94%, as evidenced by Figure 8 which shows that in the diagram of the results of the large group trial, all respondents gave positive values, namely "strongly agree" and "agree" only. This shows that multimedia drills and practice are generally well received, and the results of this trial provide a positive picture of product acceptance by students in using media for Arabic language materials.

Table 5. Descriptive Statistic Data

No.	Item	N	Minimum	Maximum	Mean	Std. Deviation
1	Q1	20	3	4	3.95	0.224
2	Q2	20	3	4	3.9	0.308
3	Q3	20	3	4	3.9	0.308
4	Q4	20	3	4	3.75	0.444
5	Q5	20	3	4	3.45	0.510
6	Q6	20	3	4	3.75	0.444
7	Q7	20	3	4	3.8	0.410
8	Q8	20	2	4	3.5	0.688
9	Q9	20	2	4	3.6	0.598
10	Q10	20	3	4	3.75	0.444
11	Q11	20	2	4	3.65	0.587
12	Q12	20	2	4	3.45	0.605
13	Q13	20	3	4	3.75	0.444
14	Q14	20	2	4	3.7	0.571
15	Q15	20	3	4	3.8	0.410
16	Q16	20	3	4	3.8	0.410
17	Q17	20	3	4	3.8	0.410
18	Q18	20	3	4	3.7	0,470
19	Q19	20	2	4	3.65	0.587
20	Q20	20	3	4	3.75	0.444

The tabulated data on student responses to the use of multimedia drill and practice (see Table 5) show a generally positive response, with mean values ranging from 3.45 to 3.95 on a scale of 1-4. Most of the items show stability in student responses, reflected in the relatively low standard deviation value, which indicates that student responses to each item tend to be homogeneously or uniformly distributed. Nonetheless, some items showed higher variances and somewhat lower means, indicating differences in students' opinions or interpretations. Overall, however, these findings provide a positive picture of student acceptance of multimedia drills and practice.

So, the results of the trial of 20 students through individual trials with 5 students, small groups with 5 students, and large groups of 10 students obtained a recapitulation value of 93%. According to the results of the data processing above, it can be concluded that the drill and practice multimedia product in Arabic language lessons is declared valid.

Discussion

The drill and practice method applied in the multimedia developed by researchers is based on behavioristic theory, constructivist theory, and cybernetic psychology theory. Behavioristic theory emphasizes behavior change through habituation or repeated practice and reinforcement of responses, either through the use of rewards or punishments (Shahbana et al., 2020). The constructivist theory emphasizes providing opportunities for students to practice and practice independently to construct language skills with previous abilities. In addition, cybernetics theory highlights the importance of feedback as a means of behavior control and modification (Padlurrahman, 2019). Drill and practice with the application of this theory is proven to be able to improve student skills (Herliana et al., 2019). Meanwhile, the cognitive domain of using the drill and practice method in this study can improve vocabulary mastery by strengthening students' memory (remembering) and understanding (understanding), according to levels C1 and C2 in Bloom's Taxonomy (Fauzet, 2016). The application of the cognitive domain of the remembering level in the activity of memorizing *mufrodat*, then the understanding level in the context of using vocabulary in the form of sentence patterns or called *tarkib*.

Learning multimedia development products using the drill and practice method for Arabic language subjects for grade V students. It was developed to know the feasibility and validity of multimedia drills and practice as an alternative learning media in increasing interest in learning Arabic and enriching vocabulary mastery (*mufrodat*). The multimedia design is adapted to the characteristics of elementary school students who tend to like animations or cartoons like astronauts. This is also the basis for giving the name to this multimedia, namely Tikrar Space. Previous research also developed drills and practice multimedia to help students expand vocabulary in learning Japanese for high school students (Lestari et al., 2020). Departing from that research, researchers sought to develop media for elementary school students tailored to the attractiveness and interest of students in learning Arabic.

The innovation in multimedia development by researchers lies in the integration of visuals, audio, and interesting animations, emphasizing the interactivity aspect. The design of the multimedia interface utilizes the Canva application. In designing, the principles of Mayer (2001) are applied, although not all principles are implemented. To ensure that each element is interconnected and forms a clear and understandable message, the principle of coherence is applied when using the elements of limb images and text as answer choices. Redundancy is applied through the use of menu icons without text and pictorial questions to reduce unnecessary information. Signaling is reflected in the emphasis of words through different shapes and colors, as well as the presentation of several slides to separate each learning topic. By Mayer's principle, the use of graphic elements such as images, icons, and shapes is emphasized in the interface design to increase visual appeal and support the delivery of messages more clearly. The application of Mayer's principle in developing interactive multimedia design as learning media provides significant results (Sinaga et al., 2023). Therefore, developing interfaces by taking into account Mayer's principles is a strategic step to create quality multimedia that supports learning objectives.

In this study, these principles support the increase of students' interest and reduction of cognitive load towards learning Arabic. This research is in line with the findings of Putri & Muhtadi

(2018) which also shows that the use of Mayer's principles in multimedia can increase learning effectiveness. Likewise, in the development carried out by researchers, namely the use of time continuity through "right/wrong" animations along with audio, thus successfully creating a more interesting learning experience. Personalization, by integrating communicative audio, can meet the needs of students. Therefore, the results of trials and validation that have been carried out by researchers show the effectiveness of these principles by the data described above.

The interface design in Canva was then turned into an interactive one using the hyperlink/action and animation/trigger features in PowerPoint. This process involved emphasizing interactive elements, including navigation buttons, practice questions, and several other responsive elements. The presentation of interactive material helps students to see concretely, which was previously abstract (Havizul, 2020). In addition, the material is adjusted to the learning indicators, and equipped with instructions for using the media. When indicators, basic competencies, learning objectives, learning materials, and evaluations are by the learning objectives of the teaching materials, they can support the learning process such as making it easier for students to understand the material (Dwiqi et al., 2020). This is in line with this research which produces multimedia with various features that make students more enthusiastic about participating in learning activities.

Multimedia includes various features and exercises that can be done repeatedly as an indicator of the application of the drill and practice method. Drill and practice-based learning media provide instant feedback to provide information about student performance through correct or incorrect detection (Purba et al., 2021). The focus on these exercises helps students to focus more on the material that must be mastered. Based on the material expert's response to the "*Tikrar* Space" multimedia drill and practice product, the aspects of content, language, and presentation feasibility are positively assessed. The learning materials included are the learning objectives of Arabic adapted from the student handbook. In addition, the material expert also gave suggestions that the Arabic writing on each illustration/image used could be read clearly, and used a familiar font, such as *Traditional Arabic*, *Sakkal Majalla*, or *Droid Kufi Arabic*. But overall, the material expert assessed that the material in this media already has good quality.

The results of the review from the media expert, the navigation/operation aspects of the multimedia drill and practice product are also considered positive, which has reached a good standard. These results are supported by research that states that the review of multimedia drills and practices obtained from media experts and material experts shows a positive value (Lestari et al., 2020). In particular, media experts appreciate the appearance of multimedia because it is attractive and by Mayer's principles. Even so, it would be nice if the button format used could be optimized. The audio aspect also received a good assessment with the use of the researcher's voice that supports learning. Not only that, the benefit aspect of this multimedia is considered to be able to help students understand and master Arabic vocabulary.

Based on the results of student trials through a series of product trials of multimedia drill and practice "*Tikrar* Space", this product is considered to have attractive qualifications. The level of attractiveness of this multimedia is obtained from individual trials, small-group trials, and large-group trials. In terms of appearance and presentation, this multimedia gives an attractive and easy-to-understand impression, thus providing an effective attraction for students. Students' responses to the operation of this multimedia prove that it is easy for students to explore the content and have an enjoyable experience. Interactive features in the multimedia provide opportunities for students to actively participate in learning activities (Nuritno et al., 2017). Overall, students' reactions show that the drill and practice multimedia "*Tikrar* Space" suits students' needs and preferences. Thus, a good response from students is an indicator of success in developing multimedia for Arabic language learning.

CONCLUSION

Learning Arabic for some students is not considered easy, making it a boring learning situation. So, students need a product that can support the learning process of Arabic, especially in mastering *mufrodat* (vocabulary). The development of multimedia drills and practice "*Tikrar* Space" is an alternative step in overcoming these problems. Based on the results of the study, the material

validity test results were obtained at 95%, and the media validity test obtained a value of 98%. Meanwhile, the recapitulation of the results of the trial to students obtained a score of 93%. This research proves that the use of multimedia by applying the drill and practice method in Arabic lessons gets a good response from students as users. The use of this multimedia obtained positive reviews from media experts, material experts, and students as research subjects, where the multimedia is valid to show its potential as an interesting learning media and worth using. Suggestions, for further research can integrate technology in learning and combine it with various approaches such as gamification, adaptive learning, collaborative learning, as well as the use of Augmented Reality and Virtual Reality to increase the effectiveness and interactivity of learning.

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