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Development of Interactive Powerpoint Media to Stimulus the Ability to Recognize Flat Shape in Children Aged 5-6 Years

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Abstract

This research aims to develop a product to increase children's interest in learning and enrich the variety of learning media. The method used in this research is Design and Development (D&D) and in creating or developing products, researchers use the ADDIE model. The validation test results for interactive PowerPoint media from material experts showed a score of 3.6 in the "Very Feasible" category, while media experts gave a percentage of 3.9 in the "Very Feasible" category, and language experts gave a score of 3.3 in the "Decent" category. Therefore, interactive PowerPoint-based learning media is considered very feasible and meets the established standards. The results of the child's observations showed an N-Gain value of 0.8 in the "High" category with an N-Gain effectiveness interpretation of 84.6, including the "Effective" category. The results of the response test show that the average value of the recapitulation of responses from Teacher 1 and Teacher 2 shows a value of 3.8. It can be concluded that the media suitability assessment criteria developed are "Fully Implemented" which are effective for use in learning activities.

Keywords: flat shapes; interactive powerpoint; learning; media.

INTRODUCTION

Early childhood is a very crucial period for the child's further development and growth, because it is a sensitive period in a child's life. The period between the ages of 0 and 8 is known as the "golden era". At that time all children's lives begin, are formed and guided wisely and correctly (Paramita, 2017). This period is the right time to lay the foundations for developing cognitive, physical-motor, language, social-emotional, self-concept, moral arts and religious values (Matrinis, 2010). Child development is a period of forming the foundation for personality and skills that will determine the child's subsequent life experiences (Talango, 2020). So efforts to develop all the potential of early childhood must begin so that children's growth and development is achieved optimally.

The cognitive development of children aged 5-6 years includes: Being able to group objects in various ways (color, size, shape), recognizing cause and effect, being able to carry out simple trials, recognizing geometric shapes, recognizing addition and subtraction with objects. (L.N & Sugandhi, 2011). One aspect of this cognitive development is that children can name 7 shapes such as circles, squares, triangles, rectangles, hexagons, rhombuses, trapeziums (Mumayizah, 2019). The activity of introducing flat shapes is a form of development that focuses on physical development (coordination, fine and gross motor skills). Geometry is a field of mathematics related to shape, size, spatiality and the properties of space (Gejard & Melander, 2018). In geometry 3 we discuss objects related to space from various dimensions that we are familiar with, second-dimensional space in the form of flat shapes and third-

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dimensional space, in the form of spatial shapes. However, the geometry that needs to be taught to young children is only geometry in two-dimensional space or in the form of flat shapes. Introduction to flat geometric shapes for early/pre-school children including triangles, quadrangles/squares, rectangles and circles (Kurniawati, 2020). The benefits of getting to know flat shapes for young children are that it will be easier for children to recognize, understand, memorize, describe and describe objects around them based on similarities or differences in shape so that children can solve problems in the environment in everyday life (Sholikhah, 2013). Apart from that, it is also important in education to utilize media that attracts children's interest and motivation.

Based on the results of field observations, the results of observations in the learning process to develop cognitive aspects, especially to recognize flat shapes, children feel bored and bored, there are even some children who do not yet understand how to recognize flat shapes and understand flat shape patterns. The introduction of square and rectangular shapes sometimes confuses young children. It is difficult for us to explain to young children the importance of introducing flat shapes. They haven't used a definition. Early childhood children only rely on their sense organs to look for the similarity of an object, whether it is a flat shape or a spatial shape, they don't really pay attention to it. Children feel bored during the learning process because class teachers are still unable to maximize technology in developing learning media in the classroom learning process. So this classification ability will increase if young children receive appropriate mathematical experience that is easy for them to understand using their eyesight. They need an interesting way to teach young children to learn, in this case familiarity with flatness, but it doesn't feel like learning, like playing. To increase the enthusiasm of children aged 4 to learn to recognize and remember, they can use creative learning media.

Learning media plays a very important role in the learning process to help teachers make it easier to convey learning material to children so that they can achieve the learning objectives that have been formulated. According to (Johari, 2016) Animation media is the movement of an object or image so that it can change position. In addition to movement, objects can change shape and color. Animation media in learning functions to attract children's attention to learning so that it can provide faster understanding for young children. Apart from utilizing existing learning media, teachers can now also create or design their own learning media according to the teacher's abilities and children's needs. One of the uses of information technology-based media in learning is that teachers can create interactive PowerPoints. As an interactive learning medium, PowerPoint has been proven to effectively attract students' attention and motivation in accepting the learning delivered by the teacher (Putri & Nurafni, 2021). Interactive learning media assisted by PowerPoint will be very helpful in the learning process because this media can combine all media elements such as text, images, sound, even video and animation so that it becomes an interesting learning media.

There are several previous studies that support interactive PowerPoint learning media, the first by (Wardana, 2020) stated that interactive PowerPoint learning media on the theme of my homeland for children aged 5-6 years can be used as a tool in learning with a very suitable category. Further research by (Savitri & Zaman, 2021) states that technology-based learning media has a big influence on children's learning motivation and learning outcomes, because technology-based learning media is an effective learning media and will increase children's learning motivation, so that children enjoy learning and have an impact. on quality children's learning outcomes. Further research by (Gusmaniarti et al., 2023) Based on the results of research analysis of technology-based learning methods using interactive power point media, they are effective because they are able to influence the development of children's

cognitive abilities at Aisyiyah 52 Kindergarten, this can be seen from how they are treated (treatment) to During the learning process, children look enthusiastic about the interactive power point media that is applied because the interactive power point media used is made in an interesting way. Using PowerPoint can make an idea more interesting (Sari et al., 2020). Powerpoint media can be used as a message channel, can represent teachers or teachers to convey information more thoroughly, clearly and interestingly.

The novelty in this research is that it can continue to develop digital-based learning media according to the theme that will be conveyed to children, attractive designs, colorful so that children will be more interested and learning in the classroom will be conveyed well. Then teachers can use quizzes or evaluation questions on Powerpoint. interactive to measure the extent of children's understanding when given material. The quizzes are designed with various interesting animations so that children's motivation to work is high. For these reasons, the researcher chose interactive PowerPoint learning media which is expected to further increase children's motivation and interest in learning, so the researcher intends to add activities that are game-like and more interactive to the PowerPoint learning media.

METHOD

The research method used is the D&D (Design and Development) research method with the aim of producing a learning media product that is able to answer existing problems. The media product developed in this research is interactive PowerPoint. This research focuses on the design and development process which has been explained, analyzed, and finally an evaluation of a product that has been made. In creating or developing products, researchers use the ADDIE model. This research was carried out at a kindergarten in Sumedang involving 13 kindergarten students with a target age of 5-6 years.

This research focuses on the development and design process which has been explained, analyzed and tested on products that have been made. The research design used by researchers is the ADDIE model. According to (Tegeh et al., 2014) explained that the ADDIE model is a systematic learning design model which consists of five steps, namely analysis which is carried out to see the needs and problems that exist in the learning environment. where the researcher carries out an analysis of the teacher through interviews to find out how the delivery of mathematics material is carried out and to find out the characteristics of the target children, the design stage is where the researcher begins to design learning media that is adapted to the results of the needs analysis and also the teaching material contained in GBPM (Media Program Outline), the development stage where the product creation process is carried out from the stage of creating images, creating character animations, determining the use of language, creating dubbing, editing the entire video until completion. Furthermore, in the process of making the product, validation is carried out by several experts consisting of material experts, language experts and media experts. This validation is a validation from the lecturer which is continued with the implementation stage where the media that has been developed is tested on 15 children and kindergarten teachers to find out the response to the use of the interactive PowerPoint learning media, and the final stage is evaluation where the researcher carries out several improvements that build on the suggestions and input given during media trials so that they can improve the quality of product development in the form of interactive PowerPoint media when used based on children's learning needs.

The instruments used to collect data in this research were questionnaires, interviews and observations. The list of questions in this research questionnaire was adapted to the needs of

researchers. The researcher's media validation sheet refers to the opinion of (Rustandi & Rismayanti, 2021) regarding the principles of universal instructional design for PowerPoint, bearing in mind that in its implementation interactive PowerPoint learning media is implemented by teachers in order to make it easier for children to learn and foster children's independence because access to learning content is not tied to space and time. Below is a summary table of the required data and the techniques for obtaining it.

Table 1. Recapitulation of Data, Instruments and Techniques Used

Data	Research Instruments	Data Collection Techniques
Needs Analysis	Interview Guidelines	Interview
Media Validation	Validation sheet	Inquiry
Teacher and Child Response	Response Questionnaire and Observation	Results of teacher questionnaire responses and observations of children aged 5-6 years

The data analysis technique used is descriptive qualitative where the questionnaire response results use a Likert scale guide with a scale of 1-4. Based on (Budiaji, 2013), the Likert scale is one of the easiest measurement scales to use. On media that has been created, a media feasibility test process is carried out using a questionnaire accompanied by scoring on a Likert scale. The data obtained before and after carrying out learning using interactive PowerPoint media in class and learning without learning media is data on negative behavior and student learning outcomes as reflected by the pretest-posttest scores. After the two samples were given different treatments, the data obtained from the test results were analyzed to obtain the gain. According to (Hake, 1999), the amount of increase can be calculated using the normalized gain formula (g) using the Microsoft Excel application as follows:

$$\text{N Gain} = \frac{\text{Posttest Score - Pretest Score}}{\text{Ideal Score - Pretest score}} \quad \text{.....(1)}$$

Apart from that, the needs analysis data uses a validated interview guide which then describes the results based on the results obtained when the interview was conducted. Meanwhile, media validation data is processed by describing the results based on a media validation sheet questionnaire.

RESULTS AND DISCUSSION

The research used to develop a product, the product developed is an interactive PowerPoint for children aged 5-6 years so that it becomes a product that is suitable for use for learning activities. In this case, the product developed by researchers is an interactive PowerPoint to stimulate the ability to recognize flat shapes in children aged 5-6 years. Design and Development (D&D) research is research related to the design and development of a particular model or product to answer real problems in education (Rusdi, 2018). The design and development carried out by researchers refers to the ADDIE development model which has five activity stages, namely Analysis, Design, Development, Implementation and Evaluation. The following are the research results obtained by researchers based on the ADDIE development model.

The first stage in this research is the analysis stage. At this stage, a needs analysis was carried out by conducting interviews with teachers at kindergartens in the Sumedang area.

According to (Sugiyono, 2020), an interview is a meeting between two people to share information and ideas through questions and answers, which allows giving meaning to a particular topic. Based on interviews conducted with the teacher, information was obtained regarding several needs analyzes in the form of media used. Media used to stimulate children to introduce flat shapes and improve cognitive abilities is still limited to the lecture method in learning. Therefore, the variety of media applied in learning about flat shapes to improve children's cognitive abilities is still lacking. Children experience boredom and boredom, especially when it comes to recognizing flat shapes, and some of them even have difficulty understanding patterns and shapes of flat shapes. Optimal efforts are needed to maximize children's cognitive development through a more varied learning approach.

The data obtained further states that learning media is really needed because the importance of learning media is illustrated through its role in delivering learning material from teachers to students, because this media is able to provide additional dimensions that enrich students' understanding, stimulate imagination, and motivate the teaching and learning process. By using learning media, teachers can create more creative and interactive learning experiences. Therefore, the continued application of learning media is a necessity to optimize the learning process in an educational era that is increasingly developing and demands innovation. According to (Munasti, 2022), PowerPoint is a type of software that is specifically designed to be able to present multimedia programs in a very interesting way, is easy to create, easy to operate and relatively cheap. The learning process carried out does not fully use learning media, especially interactive PowerPoint learning media. The teacher revealed that obstacles in delivering material through media arise due to a lack of supporting learning media, especially when teaching material about flat shapes.

Analysis of this data shows that teachers need learning media that supports teaching 40 material about flat shapes. Therefore, it is hoped that the development of Interactive PowerPoint by researchers will make it easier for teachers to deliver this material. With this media, it is hoped that teaching about flat shapes can be more interesting, interactive and effective for students. It can be concluded that the development of learning media has an important role in improving the quality of learning and needs to continue to be developed to support educational progress.

Next, an analysis of the characteristics of the students is carried out with the aim that the learning media developed can be used effectively based on the needs of the students. Through the interview process, researchers succeeded in digging up information indicating that the characteristics of class B students in kindergartens in Sumedang like learning media that is packaged in an attractive way, containing pictures or illustrations. Apart from that, students also no longer feel unfamiliar with the learning media that will be used, in line with one of the applications of Piaget's theory of cognitive development in learning is to ensure that the learning material taught feels new but is not too foreign to students. The characteristics of class B students in kindergartens in Sumedang are that they get bored easily during the learning process, and lack focus in learning activities so they are often engrossed in talking with their peers. Therefore, a deep understanding of these characteristics is the main basis for designing learning media that is not only interesting, but can also overcome special challenges that may arise during the learning process. There is a need for fun learning innovations, namely by creating learning media that support creating an atmosphere. which is more interesting, varied and efficient.

Next, an analysis of the learning environment is carried out so that we know how the climate is created in the learning process itself. Learning environment analysis aims to determine the situation, conditions and availability of learning resources that support learning activities. Based on the results of interviews conducted, researchers succeeded in digging up information related to learning patterns in a kindergarten in Sumedang. In this kindergarten, the learning process is carried out 5 days a week, starting from Monday to Friday, with learning time from 08.00 WIB to 10.00 WIB. The kindergarten has a total of 4 classes filled by 4 teachers. Meanwhile, various learning media are used routinely in teaching and learning activities, including puzzles, blocks, flash cards and story books. This information provides an in-depth picture of the structure and dynamics of learning in the kindergarten, which can later become a basis for designing learning strategies that are more appropriate to the needs and characteristics of students in that environment.

Based on the problem analysis above, the researcher plans to develop an interactive PowerPoint learning media. Interactive PowerPoint was chosen as an effective learning medium because its format contains various elements, such as images, video, audio, games and other interactive features. This diversity allows students to be actively involved in the learning process, creates a more dynamic learning experience, and provides variations that can enrich their understanding of the material presented. Thus, it is hoped that the use of interactive PowerPoint can increase students' involvement and interest, as well as stimulate their cognitive development with a more innovative learning approach.

The second stage is design, where at this stage the researcher begins to design the learning media design that will be developed based on the needs analysis that has been obtained which specifically includes the design of interactive PowerPoint-based learning media. At this planning stage, researchers view design as a process that involves several essential steps to ensure effectiveness and student involvement starting from selecting and determining the scope of the material. Based on the analysis stage, the material that will be integrated into this interactive PowerPoint learning media focuses on introducing flat shapes for children aged 5-6 years. This material includes a number of flat shapes, such as squares, rectangles, triangles, circles, trapezoids, parallelograms, rhombuses and kites. Each form will be explained in depth with an approach appropriate to the cognitive development of children of this age, ensuring that the presentation of the material is not only informative but also appropriate to their level of understanding. Media Program Outline Analysis (GBPM) begins by identifying basic competencies, main points, language, sub-topics and forms of presentation. The initial stage focuses on determining the basic competencies that will be used. After that, the researcher determines the material that will be presented as the next step. The next process involves determining the sub-topics and forms of presentation that will be integrated into interactive PowerPoint learning media starting from:

❖ Making Flowcharts

Before entering the Storyboard creation stage, the researcher preceded by designing a Flowchart first, which aims to describe the flow of the program to be created. According to (Anggara, 2019), flowcharts are symbols used to logically and systematically describe the sequence of processes in a computer program. This is done to make it easier for researchers to develop learning media. The following is a flowchart that describes the flow of the interactive PowerPoint learning media that will be developed.

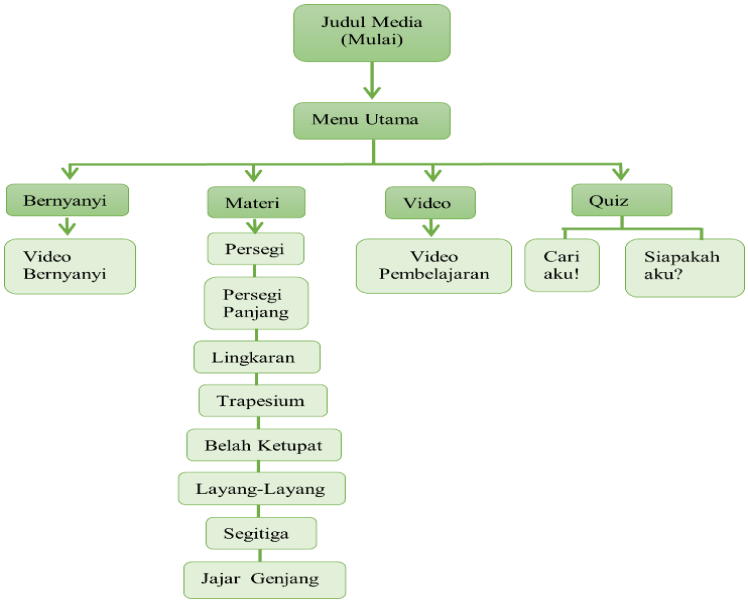
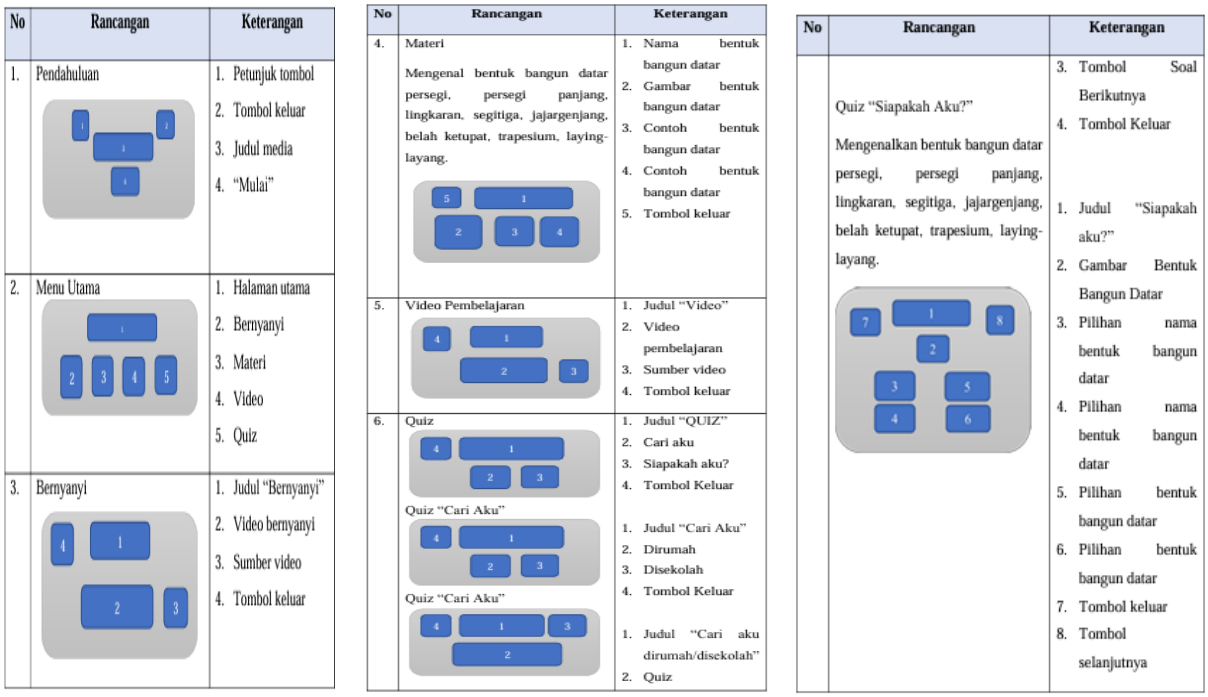


Figure 1. Interactive Powerpoint Learning Media Flow Diagram

The flowchart in Figure 1 above provides an overview of the series of programs from interactive PowerPoint learning media. Each element in the image is connected by lines, creating a network that indicates the interrelationships and dependencies between parts. The flow of this interactive PowerPoint learning media starts from the first page which contains the title, and users must click the "Start" button to go to the main menu page. On the main menu page, there are several menu options such as singing, materials, videos, and quizzes. This learning media is designed to give users freedom to access the various menus available. Users can choose the menu according to their wishes, opening up opportunities to explore the variety of learning content provided. This system creates an interactive learning experience, allowing users to detail the learning journey according to their needs.

❖ **Manufacture Storyboard**

The next stage after completing the Flowchart in the planning process is designing the Storyboard. According to (Soenyoto, 2017), storyboards are visual representations that change written text into images or visuals that resemble films. Thus, a storyboard can be concluded as the presentation of a series of manual images from a learning flow, which was initially in text form, into filmic images or visuals that illustrate a story. Storyboards were produced with the aim of making it easier for researchers to develop interactive PowerPoint learning media. The results of this Storyboard design are based on the menu that has been prepared by the researcher as shown in the following image.



No	Rancangan	Keterangan
1.	Pendahuluan	1. Petunjuk tombol 2. Tombol keluar 3. Judul media 4. "Mulai"
2.	Menu Utama	1. Halaman utama 2. Bernyanyi 3. Materi 4. Video 5. Quiz
3.	Bernyanyi	1. Judul "Bernyanyi" 2. Video bernyanyi 3. Sumber video 4. Tombol keluar
4.	Materi Mengenal bentuk bangun datar persegi, persegi panjang, lingkaran, segitiga, jajargenjang, belah ketupat, trapesium, laying-layang.	1. Nama bentuk bangun datar 2. Gambar bentuk bangun datar 3. Contoh bentuk bangun datar 4. Contoh bentuk bangun datar 5. Tombol keluar
5.	Video Pembelajaran	1. Judul "Video" 2. Video pembelajaran 3. Sumber video 4. Tombol keluar
6.	Quiz	1. Judul "QUIZ" 2. Cari aku 3. Siapakah aku? 4. Tombol Keluar
	Quiz "Cari Aku"	1. Judul "Cari Aku" 2. Dirumah 3. Disekolah 4. Tombol Keluar
	Quiz "Cari Aku"	1. Judul "Cari aku dirumah/disekolah" 2. Quiz
	Quiz "Siapakah Aku?" Mengenalkan bentuk bangun datar persegi, persegi panjang, lingkaran, segitiga, jajargenjang, belah ketupat, trapesium, laying-layang.	3. Tombol Soal Berikutnya 4. Tombol Keluar 1. Judul "Siapakah aku?" 2. Gambar Bentuk Bangun Datar 3. Pilihan nama bentuk bangun datar 4. Pilihan nama bentuk bangun datar 5. Pilihan bentuk bangun datar 6. Pilihan bentuk bangun datar 7. Tombol keluar 8. Tombol selanjutnya

Figure 2. Design Storyboard

❖ Determining Product Specifications

After completing the storyboard design, the next step is to determine product specifications for interactive PowerPoint learning media. This media is designed to introduce flat shapes to children aged 5-6 years in PowerPoint format which is equipped with menu options, images, audio and video. The material presented includes various shapes such as squares, rectangles, circles, triangles, trapezoids, parallelograms, rhombuses, and kites. The selection of material is based on mathematics content standards for early childhood, taking into account relevant core and basic competencies.

Apart from that, this learning media does not only focus on presenting text or images, but is also equipped with discussion videos that enrich children's understanding of flat shapes. These videos are designed to provide a more dynamic and engaging learning experience for children, helping them understand mathematical concepts in a fun way.

Furthermore, this learning media includes a quiz section regarding flat shapes. The quiz aims to test children's understanding of the material that has been presented, making the learning process more interactive and enabling assessment of the development of their understanding. With this approach, interactive PowerPoint learning media is expected to provide a holistic and effective learning experience in introducing mathematical concepts to children aged 5-6 years.

The third stage is the Development stage which is the implementation step of the design stage, where the researcher creates a product that has been previously planned in the form of interactive PowerPoint learning media. At this stage, details of the product development process will be explained, including the validation stage by experts and the product revision process. The product that has been produced will go through a validation process by material experts, original media and language experts. This validation is carried out to obtain input and suggestions from experts, which will later be used in the product revision process. The product creation stage begins with making a prototype. After completing the storyboard, the researcher creates a prototype of the media that will be developed. A prototype is a display that depicts

the contents of an interactive PowerPoint learning media design. The following is an example of a prototype that researchers made.

Figure 3. Interactive Powerpoint Home Page, Flat Build Material Page, & Last Page

After the product creation was carried out, an expert validation was carried out to assess the effectiveness of the interactive PowerPoint learning media that had been developed by the researcher. The validation process involves experts in the fields of material, language and media, who use instruments that have been prepared by researchers. Apart from being an evaluation, this validation is also intended to obtain constructive feedback and suggestions from experts, which will then be used as a basis for improvements for product development by researchers. This is done so that the product media that has been developed is suitable for use when tested on users. At this stage the validation process is carried out by UPI Cibiru Campus lecturers.

As a result, the media feasibility assessment criteria in the 58 media developed are in the "Very Appropriate" category based on practical and useful interactive multimedia indicators for teachers and students, interactive PowerPoint readability, media readability, cover design, interactive PowerPoint design, and functionality. Therefore, it can be suggested that the interactive PowerPoint learning media that has been developed is very suitable for use in learning with improvements. Researchers have received input and suggestions to improve the product which have been assessed by media experts. These suggestions include improvements in the form of adding "dubbing" sound in interactive PowerPoint. After receiving input and suggestions from media experts, the researchers made a number of revisions to ensure that the learning media developed met suitability when used by teachers and students.

Furthermore, in terms of material validation, it was carried out with material experts using a questionnaire consisting of 12 questions related to aspects of content suitability and learning aspects. As a result, the criteria for assessing the suitability of material in the media being developed are in the "Very Appropriate" category based on indicators of material accuracy, completeness of material, suitability for children, and provision of learning assistance. Therefore, it can be suggested that the material in the interactive PowerPoint learning media that has been developed is very suitable for use in learning with improvements. Researchers have received input and suggestions to improve the product which have been assessed by material experts. These suggestions include improvements in the form of flat shapes used, preparing the layout of flat shapes, writing sources and increasing the number of flat shapes. After receiving input and suggestions from material experts, the researchers made a number of revisions to ensure that the learning media developed met suitability when used by teachers and students.

Another validation is by validating language experts using a questionnaire consisting of 9 questions related to aspects of language use. As a result, the criteria for assessing the appropriateness of language in the media being developed are in the "Appropriate" category based on indicators of the language used in the interactive PowerPoint learning media being appropriate, the sentences used in the interactive PowerPoint learning media, and communicative. Therefore, it can be suggested that the interactive PowerPoint learning media that has been developed is suitable for use in learning with improvements. Researchers have received input and suggestions to improve the product which have been assessed by media experts. These suggestions include corrections in writing incorrect words. After receiving input and suggestions from media experts, the researchers made a number of revisions to ensure that the learning media developed met suitability when used by teachers and students.

The fourth stage carried out in this research is Implementation. After completing the product feasibility test, the next step is to apply the product to TK B teachers and students, in accordance with the focus of this research. The aim is to obtain data and assess the suitability of users who will use this interactive PowerPoint learning media in the learning process. The implementation of learning media products was carried out in one of the kindergartens in the Sumedang area. The trial process was carried out on class B kindergarten students in Sumedang. The trial was carried out in two trial stages. The first stage of testing, namely the pre-test, was carried out to determine children's responses and understanding regarding the introduction of flat shapes.

Table 2. Pre-test Score Results

No.	Name Initials	Pre-test Score (Observer)		Total	Average	Value
		P1	P2			
1	AS	25	20	45	22,5	80
2	FAD	20	20	40	20	71
3	MUT	25	20	45	22,5	80
4	BA	20	16	36	18	64
5	FAI	16	15	31	15,5	55
6	RA	15	16	31	15,5	55
7	MA	16	17	33	16,5	59
8	SH	20	16	36	18	64
9	FER	20	20	40	20	71
10	RI	16	20	36	18	64
11	FA	20	16	36	18	64
12	AL	15	20	35	17,5	63
13	KA	17	20	37	18,5	66
Average Value						66

The results of the interactive PowerPoint media response by students stated that the learning media was observed and given a total score of 66. Based on the assessment scale for early childhood, this score of 66 is included in the BSH category, which means "Developing According to Expectations". Before using learning media, the child's response belonging to this category, where some children felt bored and less interested in participating in learning activities. Of the 13 children observed, there were 6 children who were not able to distinguish flat shapes, so further improvement was needed by using more interactive media.

The second stage in the series of learning activities began by applying interactive PowerPoint learning media to introduce flat shapes to children aged 5-6 years, with a total of 13 students. The research process is carried out face to face or directly through direct meetings. The trial begins by preparing the students' conditions, followed by prayer, and continues with ice breaking activities to help students focus more on learning and increase their enthusiasm for learning. Next, provide information about the learning media that students will use. In its implementation, students are arranged to sit in a circle. Researchers started by asking questions to students, followed by an introduction to interactive PowerPoint learning media as the learning media that will be used. After completing the introduction to learning media, the learning process begins with singing activities about flat shapes. Next, flat shapes are introduced to students by presenting examples of pictures and inviting them to match these shapes with objects around the child. After providing the material, students are invited to watch a video which provides further information about flat shapes. The next step is to involve students in a quiz related to flat shapes. When students use interactive PowerPoint learning media, researchers give them instructions to use laptops to participate in quizzes about flat shapes. While students use interactive PowerPoint learning media, researchers simultaneously observe the achievements of students during the learning process using this media. Observations involve aspects of students' responses to interactive learning media, as well as learning outcomes or understanding obtained by students while using interactive PowerPoint learning media. There were seven indicators observed, consisting of three indicators of children's understanding (cognitive) and four indicators of children's responses.

The child's reaction to learning media was observed and assessed with a total score of 95. Based on the learning assessment scale for early childhood, this score of 95 falls into the BSB category, which shows that the use of learning media has increased the child's understanding and reached the "Very Well Developing" level according to with the expected indicators. In the pre-test, it can be seen that the children's learning result in recognizing flat shapes before using interactive media was 66 and after using interactive PowerPoint media they got a score of 95. This means that descriptively there is a difference in the average learning outcomes for introducing flat shapes before and after using the media. interactive powerpoint.

Table 3. Paired Sample Test Effectiveness Test Results

	Paired Differences					t	dt	Sig (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Pre test Post Test	29.000	8.631	2.394	23.784	34,216	12,114	12	0,000

In the picture above, the mean difference = 29 is obtained, which means the difference in scores for learning flat shapes between after and after using interactive PowerPoint media. A positive value means that after being given interactive PowerPoint media, the score for learning to recognize flat shapes is higher than before using interactive PowerPoint media. Furthermore, in the picture above, Std is also obtained. error Mean which is indicated by the

standard error number of the difference in means. Next, the most important result is the statistical price t=12.114 with df 12 and sig number= .000. Thus, it was concluded that there was a significant difference in students' learning outcomes of flat shapes between before and after using interactive PowerPoint media. This is reinforced by the data from independent t-test hypothesis testing, treated via the SPSS program. Through the N-Gain Score test using the Excel application, results were obtained using interactive PowerPoint media, pre-test and post-test results with N-Gain results of 0.8 in the "High" category with an N-Gain effectiveness interpretation of 84.6, including the "Effective" category. .

Apart from the results of student responses, data was also obtained in the form of interactive PowerPoint media responses by teachers who stated. The interactive PowerPoint media that has been developed by researchers requires teacher responses. There are 2 Kindergarten B class teachers who provide responses and assessments. The following is the identity of the Kindergarten B class teacher in Sumedang. The researcher first showed the application of interactive PowerPoint media to students. During the implementation, the teacher actively monitors the learning process using media that has been developed by researchers. After completing the implementation, the researcher gave the teacher the opportunity to evaluate the interactive PowerPoint media. Next, the researcher explained how to use the media to the teachers. The teacher filled out a questionnaire with 10 questions consisting of content/material aspects and media quality aspects of the interactive PowerPoint learning media that the researchers had developed. The following is a graph of the test results of teacher responses to the media developed.

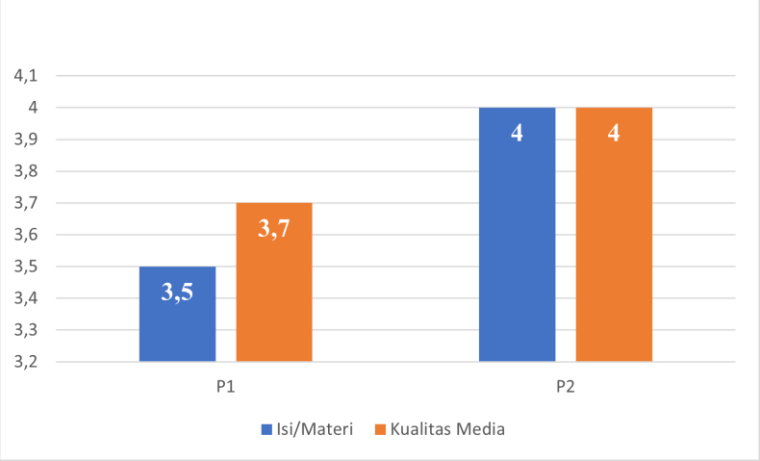


Figure 4. Teacher Response Test Results

Based on Figure 4 above, it is known that the average assessment score of teacher responses from each aspect is that the average for the first aspect by Mrs. Atin Ratina received a score of 3.6 and the average for the second aspect by Mrs. Tintin Roiauke, SE. got a score of 4. After knowing the average number of each aspect obtained, the average scores of 1 and 2 were added together and then divided by the number of aspects. Interactive PowerPoint learning media achieved an average result of 3.8. As a result, the media feasibility assessment criteria in the media being developed are in the "Fully Implemented" category based on indicators of content/material and media quality. So it can be concluded that interactive PowerPoint learning media meets practical criteria for use in learning.

The fifth stage is the evaluation stage which is the final stage. This evaluation stage is carried out at various stages starting from the analysis stage, design stage, development stage up to the implementation stage. In the analysis stage, no obstacles were found. so that the

interview activities can run smoothly. This allows researchers to collect data well, which will later become a basic reference in designing learning media. At the design stage, the obstacles found were the difficulty of determining the theme that would be used in interactive PowerPoint, determining the colors because they had to adapt to the child so that the child was interested in seeing this learning media. It is difficult to collect assets that are appropriate to the learning material in recognizing flat shapes and having to look for flat shapes around the house and at school. After that, proceed with creating GBPM, Flow charts, and Storyboards. At the development stage, evaluations were obtained from material experts in the development of interactive PowerPoint media, where experts provided input and suggestions, including creating inappropriate flat shapes, inappropriate placement of objects, too few flat shapes. Next, the evaluation is given by a media expert, namely the researcher needs to add sound to the slide material and finally the evaluation is given by a linguist, namely correcting incorrect words. These inputs and suggestions can be addressed so that implementation can proceed according to the planned time. At the implementation stage, the obstacles faced by researchers were the limitations of infocus projectors and laptops because they had to use HDMI and laptops that did not support using HDMI, but this could be overcome by learning activities using only laptops so that students could still learn to recognize flat shapes using interactive PowerPoint media. enthusiastically participate in learning.

After all research procedures were carried out, data was obtained regarding the effectiveness of interactive PowerPoint media. After going through a validation process by material experts, media experts and language experts by making the necessary improvements, the researchers then carried out trials on users, namely class B students in kindergartens located in the Sumedang area. The next step for students' responses is to test interactive PowerPoint learning media on them to evaluate how they respond to the media that has been created. This trial involved 13 students, with two trial stages.

In the initial trial stage, students were introduced to the material without using interactive PowerPoint learning media. The aim is to evaluate students' responses and understanding before they engage with interactive learning media. The child's response to learning media was observed and given a total score of 66. Based on the assessment scale for early childhood, this score of 66 is included in the BSH category, which means "Developing According to Expectations." Before using learning media, children's responses fell into this category, where some children felt bored and less interested in participating in learning activities.

The second trial stage was carried out using interactive PowerPoint learning media with the aim of finding out how students responded and understood after using learning media. The child's reaction to learning media was observed and assessed with a total score of 95. Based on the learning assessment scale for early childhood, this score of 95 falls into the BSB category, which shows that the use of learning media has increased the child's understanding and reached the "Very Well Developing" level according to with the expected indicators. Through the N Gain Score test using the Excel application, results were obtained using interactive PowerPoint media, pre-test and post-test results with N-Gain results of 0.8 in the "High" category with an N-Gain effectiveness interpretation of 84.6, including the "Effective" category. According to (Richey & Klein, 2007) stated that in various research on D&D, innovative activities have been developed to create solutions to practical problems. One solution is to develop products and tools designed to improve student learning outcomes, such as electronic-based learning media. In line with the opinion of (Muharoma, & Wulandari, 2014)

stated that learning using PowerPoint media can improve the quality of learning. This was also stated by (Savitri & Zaman, 2021) that the use of technology in learning media has a significant impact on children's motivation and learning achievement. Technology is an effective learning medium, increases children's enthusiasm for learning, and has a positive impact on quality learning outcomes, so that children are more enthusiastic in participating in the learning process.

In addition, there was an increase in students' understanding of recognizing flat shapes. This finding is in line with research conducted by (Anggara, 2019) which concluded that the use of interactive PowerPoint learning media can improve cognitive abilities, including general knowledge, understanding of science, recognition of shape, size and color patterns in pre-school children. The development of interactive PowerPoint media is based on previous research conducted by (Suci et al., 2023). The findings from this research reveal that the learning model through interactive PowerPoint has the ability to stimulate the development of cognitive abilities to think logically in grouping, function and color. Research conducted by (Anggara, 2019) The findings from this research show that the use of PowerPoint learning media has a positive impact on children's cognitive development in the learning process.

Based on the results of the two studies above, it can be concluded that the development of interactive PowerPoint learning media is considered effective and able to provide significant assistance for teachers in explaining material introducing flat shapes to children aged 5-6 years. The positive response and enjoyment from students during the learning process shows that the use of interactive PowerPoint learning media in this context gets a good response from teachers and students during teaching and learning activities.

CONCLUSION

After conducting research, it was concluded that the development of interactive PowerPoint learning media used the ADDIE procedure. At the development stage, an interactive PowerPoint was created that was validated by media experts and was declared feasible with an assessment by material experts of 3.6 (Very Appropriate), media experts 3.9 (Very Appropriate), and language experts 3.3 (Excellent). Based on the validation results, this media is considered very feasible and ready to be tested. At the implementation stage, the media was tested on kindergarten teachers in Sumedang. The test results show an average score of 3.8, with the first aspect 3.7 and the second aspect 4, indicating that this media is practical and very suitable for learning. From trials with students, the media received a total score of 95, in the "Very Well Developing" category on the early childhood assessment scale. The N-Gain Score test shows a result of 0.8 (High) and effectiveness of 84.6 (Effective). This media is considered effective and significant in helping teachers introduce flat shapes to children aged 5-6 years.

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