

Development of Microsoft Sway-Based Learning Media for Kindergarten Students

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ABSTRAK

Learning media is growing along with the times. However, many teachers are still developing media that do not keep up with the times and do not use technology as material delivery. This type of research is Research and Development with the ADDIE research model. This study aims to develop Microsoft Sway learning media for children aged 5-6 years with the sub-theme of Natural Symptoms. The results of learning media research developed using Microsoft Sway are categorized as valid with a media expert percentage of 89.7% and material experts 68.7%. The media is said to be practical by obtaining a score of 88.3% from the teacher's response questionnaire. The conclusions of this study are the application of Microsoft Sway media development to group B students at kindergarten fosters children's learning motivation. Children's learning outcomes increase with the presence of Microsoft Sway media. With Microsoft Sway media, children pay more attention to the teacher when delivering material.

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1. INTRODUCTION

Microsoft Sway is classified as one of the learning media that is simple, easy to design and use according to needs and can be reproduced as needed. However, based on observations, not many teachers understand how to use it. Through Microsoft sway, teachers can produce interactive content, including videos, images, that are relevant and interactive. In the teaching process, teachers can apply it as an assessment of material explanations to increase children's understanding in the digital era (Markamah and Nugrahani 2022). Teachers might utilise this medium as a means to enhance their professional competence. The requirement for teachers to possess the skills to effectively employ the internet and computers in educational endeavours has been recognised as a crucial professional competency. Specifically, the capacity to utilise information and communication technology (ICT) for communication purposes and personal growth has been identified as an essential skill for teachers (Flynn and Waldo, 2005). This promotes the integration of technological advancements into the educational process. The application of Information and Communication Technology (ICT) can be employed in the development of educational media for children.

Sway is a versatile presenting tool that may be utilised in any setting, leading Sudarmoyo (2018) to conclude that its adoption by educators at this moment is warranted. According to Markamah & Nugrahani (2022), Microsoft Sway may be used to quickly and easily create a wide variety of presentations, with the system operating by simply multiplying multimedia content from any website via drag & drop. Microsoft Sway's design characteristics make it simpler for users to contribute content like movies and YouTube, pictures, tweets, and other multimedia content, making it an attractive alternative to other presentation tools. Microsoft Sway may reformat presentation slides when the presenter opens them on a smartphone, laptop, or PC, giving them access to cloud-based media like photographs and videos.

The Microsoft Sway application is equipped to make it easier for users to collaborate with other users in creating projects. In addition, if the internet connection is unstable, users can still download or save it as a file. By using Sway, teachers are able to create learning materials that attract attention and are easily accessible to children through parents anywhere and anytime. With the advantages that Microsoft Sway has, of course, it is supported by a data package for its users, it is felt to be quite helpful and makes it easy for teachers to deliver material and children to receive learning material anywhere and anytime, target recipients of subject matter, both parents and children can easily open the material learning, simply open the link that has been sent by the teacher via WhatsApp. In using Microsoft Sway, the teacher can send absent forms, learning videos, voice messages, with designs that are attractive to students.

Microsoft sway-based learning media can build communication between parents and children because it is based on research results (Amin et al. 2021) that the discipline of children's learning is very closely related to parental communication. Discipline in learning is a form of fulfilment of obligations so that changes occur in children. And can build teacher communication with children. Because good communication can create interesting learning and the material presented can be understood by children. This is the key to the success of teaching teachers (Alfauzan et al. 2022). The learning media innovations developed are also useful so that children get a good education and are able to compete on a global scale and parents have experience and new information related to learning technology when using technology-based online learning, especially for those who are technologically illiterate (Rahmah 2022).

There have been many studies conducted on Microsoft sway in making learning effective in schools. However, this media is applied to elementary school students, junior high schools and high schools. Based on the results of a survey of learning media used by various teachers and the results of the data obtained, 92% already knew the criteria for selecting learning media and knew online/web-based media as well. However, based on survey results, online/web-based learning media in the form of Microsoft Sway have never been used. Even though this media has been widely used for learning media. The purpose of developing this Microsoft sway learning media is to develop media for Kindergartens, which predominantly uses image media to be converted into Microsoft sway learning media with natural phenomena as a sub-theme. This development is carried out so that teachers can develop their professional competence, namely the ability to utilize ICT to communicate and develop themselves and early childhood can understand learning material in an interesting way through the advantages possessed by Microsoft sway.

2. METHOD

This type of research is the R&D method with the ADDIE development model. The subjects used were 10 children in group B aged 5-6 years. The research was conducted at Pasar Mama, South Bengkulu, Indonesia. Data collection techniques used observation, questionnaires and tests. The tests carried out in data collection in determining the effectiveness of learning media were carried out 2 times, namely the initial test (pretest) and the final test (posttest) in the form of an oral test. The research instrument questionnaire consists of a material expert validation questionnaire, media expert

validation, teacher practicality questionnaire and the effectiveness of Microsoft sway learning media. The following is a grid of questionnaire indicators along with their data analysis techniques:

Table 1. Material Expert Questionnaire Instrument

No	Aspect	Indicator	Items
1	Content/Material	Accuracy	1,2,3,4,5
		Completeness	6,7,8
		Interest	9
2	Learning	Provide learning opportunities	10,11
		Provide assistance with learning	12
		Motivating quality	13
		Instructional flexibility	14,15
		Social quality of instructional interaction	16,17
		Can have an impact on students	18
		Can have an impact on teachers and their learning	19,20

Source : (Arsyad 2016)

Table 2. Media Expert Questionnaire Instrument

No	Aspect	Indicator	Items
1	Technical	Usefulness	1,2
	Quality	Legibility	4,5,6
2	Design	Display or image quality	7,8,9,10,11,12
	Quality	Microsoft Sway Management Quality	13,14,15,16,17

Source : (Arsyad 2016)

The validator filled out the questionnaire by giving a tick (√) to the category provided by the researcher based on a Likert scale consisting of 4 assessment scores. The results of the assessment score are then averaged and converted to an assessment statement to determine the quality and usefulness of the resulting product based on user opinion.

Table 3. Validity Criteria

No	Value Percentage	Criteria
1	0-25%	Invalid
2	26-50%	Invalid
3	51-75%	Valid
4	76-100%	Very Valid

Source : (Fathurrohmi 2019)

The development product will end when the assessment score for this learning media meets the eligibility requirements with the level of suitability of the material, media feasibility, and technical quality in the development of Microsoft sway in natural phenomena sub-theme science learning, namely > 51% with valid criteria.

Table 4. Teacher Practicality Questionnaire Instrument

No	Criteria	Question item
1	Interest	1,2,3,4,5,6,7,8,9,10,11,12
2	Media View	13,14,15
3	Theory	16,17,18,19,20

Source: (Putri N.S 2021)

The response questionnaire was given to the teacher after the initial product trial was carried out. The researcher formed a teacher's response questionnaire, which contained some questions, then the teacher filled out the questionnaire by giving a tick (√) to the category given to the researcher based on a Likert scale consisting of 3 assessment scores. Then, the results of the analysis are categorized as follows:

Table 5. Teacher Response Criteria

Practical Value	Criteria
$0 \leq P \leq 54$	Impractical
$55 \leq P \leq 60$	Less Practical
$61 \leq P \leq 75$	Pretty Practical
$76 \leq P \leq 85$	Practical
$86 \leq P \leq 100$	Very Practical

Source : (Nopela 2022)

The Microsoft Sway learning media with the natural phenomena sub-theme is said to be practical if it gets a good response from the teacher, namely $\geq 61\%$. The criteria are quite practical.

Table 6. Student Effectiveness Questionnaire Instrument

No	Science Aspect	Indicator	Items
1	Observe	Children can name the events of natural phenomena in the picture	1
2	Grouping	Children group objects that were destroyed during natural phenomena	1
		Children can classify natural phenomena that occur which are useful and not useful	1
3	Foresee	Children can know the process of natural phenomena	1
		Children can find out the causes of natural phenomena	1
4	communicate	Mention the actions that must be taken when natural phenomena occur	1
		Mention the impact of natural phenomena events	1

Source : (Putri 2019) modification with Permendikbud No. 146 2014 Years

Assessment of scores in this study is done with assessment criteria. Based on the guidelines for scoring the test scores, to facilitate data management, the assessment criteria were modified. After the score is obtained based on the criteria assessed, then the total score of the child's assessment is added up. Furthermore, the effectiveness of using Microsoft Sway can be seen by calculating the average student scores after taking the pretest and posttest, which are then converted into a range of 0 – 100 using the following formula :

$$\text{Average value} = \frac{\text{The total value of all students}}{\text{many students}} \times 100\%$$

The average pretest and posttest scores are then matched with the Microsoft Sway effectiveness criteria table as follows:

Table 7. Effectiveness Value

Intervals	Value	Criteria
$85 \leq \text{Nilai} < 100$	A	Very effective
$65 \leq \text{Nilai} < 85$	B	Effective
$55 \leq \text{Nilai} < 65$	C	Effective enough
$45 \leq \text{Nilai} < 55$	D	Less effective
$0 \leq \text{Nilai} < 45$	E	Ineffective

Source : (Nopela 2022)

The development of microsoft sway in natural phenomena sub-theme science learning is said to be effective if the posttest scores of all children are in the range of scores ≥ 3.6 or good criteria, the posttest average scores are above the pretest scores, and if the posttest average scores of all children are ≥ 65 according to the table which is determined.

3. FINDINGS AND DISCUSSION

3.1 Findings

The results of this study are presented in five stages, namely analysis, design, development, implementation and evaluation.

3.1.1 Analysis

The analysis phase consisted of two, namely an analysis of teacher needs and an analysis of student needs. Analysis of teacher needs, namely researchers conducting a survey regarding the learning media used by teachers. On March 29, 2022, researchers conducted an initial survey in one sub-district, namely Pasar Manna sub-district, which consisted of 6 Kindergartens, namely: Aisyiyah I Kindergarten, Aisyiyah 2 Kindergarten, Serasan Kindergarten, 4 Kindergarten State, 7th Kindergarten, and Fadhillah Kindergarten. 30% of the teachers were taken from each kindergarten, so there were 2 teachers from Aisyiyah I Kindergarten, 2 teachers from Aisyiyah 2 Kindergarten, 1 teacher from Serasan Kindergarten, 1 teacher from 4 State Kindergarten, 2 people from 7 Kind Kindergarten, and 2 people from Fadhillah Kindergarten so that a total of 10 teachers were given a questionnaire out of 32 teachers. The results obtained were 92% already knew the criteria for selecting learning media in the first questionnaire and also knew online/web-based media in the second questionnaire. However, based on the results of the third questionnaire analysis, online/web-based learning media in the form of Microsoft Sway have never been used. Even though this media has been widely used for learning media such as research Ardian, Hasanah, dan Rana (2020) which entitled Using Microsoft Sway and Microsoft Forms as interactive media in history learning concludes that children can more easily open learning media by simply clicking on a link sent by the teacher and the teacher can add media in the form of text, audio, video, animation, quizzes in one link.

In order to examine the requirements of children, a group of researchers conducted observational studies within kindergartens located in Pasar Manna. Based on empirical observations, it has been noted that a number of Kindergarten educators within the Pasar Manna Sub-district employ various instructional approaches to teach sub-themes pertaining to natural occurrences. Initially, the instructor inquires about the youngsters who have observed the phenomenon through the medium of television. Does anyone have knowledge of what constitutes a natural phenomenon? Subsequently, the instructor proceeds to elucidate on natural phenomena encompassing volcanic eruptions, wind patterns, the formation of rainbows, diurnal variations, and seismic activity. Subsequently, the instructor posited that the phenomenon of wind is attributed to natural forces. Subsequently, the instructor reiterates the inquiry to the youngster, inquiring about the originator of wind, specifically positing whether it is the doctor. Furthermore, the teacher seeks an explanation about the mechanisms underlying the occurrence of wind. The child responds utilising his acquired knowledge. Subsequently, the instructor proceeds to elucidate the mechanism underlying the genesis of wind, abstaining from the utilisation of visual aids.

The next day with a different subtheme. The teacher teaches as before by showing pictures, asking children and then explaining. So, from the media used by the teacher, only use pictures. This allows only a few children to be interested in the delivery of the image media. Some children are bored and not interested in learning because the media used only uses pictures so the learning outcomes that children get are not good. This is because the learning media delivered are less precise and less optimal in their use. So that the lack of children's cognitive abilities and the child's awareness of science in their environment is limited. Whereas science learning for early childhood is focused on learning related to oneself, the surrounding environment, and natural phenomena with the aim of science in early childhood.

The goals of science include (1) helping children understand scientific concepts and their interrelationships in everyday life, and (2) knowing and studying objects and events in their environment. (3) So that children can explain natural phenomena and apply scientific concepts to solving problems in everyday life; (4) helps develop a sense of awareness and love for the natural surroundings (Noor 2020). Based on the goals of science for early childhood, the indicators for assessing children's science learning are mentioning the names of events that occur, explaining the process by

which natural phenomena occur, mentioning objects that were destroyed when natural phenomena occur, explaining the dangers of natural phenomena that occur, explaining the benefits of the natural phenomena that occur, mentioning the causes of the occurrence of natural phenomena, and mentioning the steps that must be taken when natural phenomena occur.

Based on the results of this problem analysis, the researcher developed learning media based on Microsoft Sway and designed the media according to the existing problems.

3.1.2 Design

This stage begins with the design of Microsoft sway learning media that adapts to the level of developmental achievement of children aged 5-6 years. The initial step begins with compiling learning material for the sub-theme of natural phenomena. Then designing Microsoft Sway learning media. The material included is based on the daily lesson plan that exists at school. For more details as follows:



Table 8. Learning Material Design

Activity Day	Learning materials
Monday	Day and night
Tuesday	Flood
Wednesday	Earthquake
Thursday	Rainbow
Friday	Tornado
Saturday	Volcano eruption

Source: RPP Aisyiyah I school

Design of Microsoft Sway learning media products by making seven sections. The first is the cover which contains pictures and written material that will be taught. The second part contains pictures about the events of the material to be taught. The third part is about stories made by the researcher himself. The fourth contains a video of the process of natural phenomena that will be taught. The video will be made using the Canva application or can be taken directly to YouTube. The fifth part contains pictures that are carried out if natural phenomena occur. The sixth part contains prayers regarding natural phenomena that occur. The seventh part is by adding an evaluation which consists of an interactive quiz which aims to test the extent to which students understand natural phenomena material. The following is the design of Microsoft Sway learning media:

Table 9. Microsoft Sway Learning Media Design

Part	Learning
Cover	
1	
2	Introduction to Material Pictures of Natural Symptoms



Short story

3



Video Occurrence of Natural Symptoms

4



Introduction to objects found in natural phenomena

5



Introduction to the Dangers and Benefits of Natural Symptoms

6



Pictures of Prayers When Natural Symptoms Occur Accompanied by Sound / Audio

7



Evaluation of Natural Symptoms Material Being Taught

3.1.3 Development

3.1.3.1 Media Expert Validation

In the technical quality aspect of Microsoft Sway learning media, the number of validator assessments is 8 out of a maximum score of 8 with a percentage of 100% stated in very valid criteria. The quality aspect of Microsoft Sway learning media design is obtained by the number of validator ratings of 53 out of a maximum score of 60 with a percentage of 88.3% in very valid criteria. Based on the results of the media expert test above, a total of 61 is obtained with a maximum score of 68 with a percentage of 89.7% in very valid criteria.

3.1.3.2 Materi Expert Validation

Aspects of the Content/Material learning natural phenomena on Microsoft sway obtained the number of validator ratings 26 out of a maximum score of 36 with a percentage of 72.2% stated in the valid criteria. For the learning aspect, the number of validator ratings was obtained 29 out of a maximum score of 44 with a percentage of 65.9% in the criteria valid. Based on the results of the material expert test above, a total of 55 is obtained with a maximum score of 80 with a percentage of 68.7% in valid criteria.

3.1.4 Implementation

At this stage, researchers conducted field tests to see the level of practicality and effectiveness of Microsoft sway-based learning media. The practicality test was taken as an assessment based on the teacher's response regarding the use of Microsoft sway-based learning media. The sample consisted of 1 teacher at TK Aisyiyah I who already had a teacher's professional certificate. The effectiveness stage aims to determine the extent to which Microsoft sway-based learning media is made so that children can more easily understand learning material. Data on the effectiveness of Microsoft sway-based learning media seen from children's abilities in learning science. The effectiveness of Microsoft sway consists of quantitative data obtained from the results of the pretest and posttest

3.1.4.1 Practicalization Test

Test teacher practitioners who have been taken into account in the teacher's response questionnaire as an assessment of the developed media. There are 3 aspects assessed by the teacher, namely aspects of interest, media appearance and material. The results of the media practicality test according to the teacher's response have a score (88.3%) in the very practical category because the scores obtained are in the range of 76% -100%. Statement 1 with the aspect of assessing interest gets a score (91%), statement 2 gets a score (88%) and statement 3 gets a score (86%).

3.1.4.2 Effectiveness

Effectiveness results data was carried out 2 times, namely the first test before using Microsoft sway (pretest) and the second after using Microsoft sway (posttest). The results that have been obtained can be concluded that the development of Microsoft Sway learning media with natural phenomena sub-themes is declared effective and has fulfilled 3 requirements, namely the posttest score with a score of 4.02 in good criteria, the posttest average value is above the pretest value and the posttest average value is already above the value of completeness.

3.1.5 Evaluation

The evaluation stage is the assessment of the implementation stage. Based on the application and the results obtained, first, from the practicality value, it has disadvantages, namely the Microsoft Sway learning media when distributed to parents, parents cannot open it because they do not have a Microsoft email. Then the teacher must take action, namely registering the guardian's cellphone email. Then when Microsoft Sway is exported to Word or PDF for saving to a laptop the video and audio cannot be played, but only in the form of images. Second, the opinion of material experts is that it is better to make a video of a natural phenomenon yourself because the language to be provided is simpler and clearer to understand. Then the results of the data on the effectiveness of the Microsoft Sway learning media obtained, are feasible to use because the children's posttest scores before and after using the media increase from the less to good category.

3.2 Discussion

The previous media in the Kindergarten learning process at Pasar Manna dominantly used image media. According to Utami (2018), the disadvantages of this picture media are solely visual mediums, the size of the images is often not appropriate for teaching in large groups, requires the availability of a source of skill and foresight of the teacher to be able to use it, it only emphasizes sensory perception, images of objects that are too complex, are less effective for learning activities. Based on observations, school picture media cannot be stored for a long time because the media is quickly damaged and stained.

The learning media developed is Microsoft Sway-based learning media in the form of software media (website). The use of media in the form of software (website) is recommended for children to better understand the material taught by teachers in science learning which is presented in audio-visual form and can also teach teachers to master technology, which will make it easier for them to teach material practically and effectively. In this digital era, technology should be a medium that will facilitate teachers in the learning process, because Handayani (2022) argues that the existence of technology as a learning medium will make teaching and learning activities effective, efficient, and productive.

Early science learning that is applied to Microsoft Sway-based learning media is based on Nugraha's opinion in (Karlina, Kurniah, and Ardina: 2018) that science learning is very important for children in their environment. Science learning allows children to explore and improve their developmental skills, especially cognitive skills, helps children develop creative thinking skills and enables them to solve everyday life problems. Teaching science at an early age is easy and does not require deep research. By introducing science to early childhood education, teachers should create learning that refers to problem-solving so that they must be able to learn to solve problems they face in everyday life.

The results of the study show that learning media based on Microsoft Sway is valid, practical and effective in science learning with the sub-theme of natural phenomena. The research data is valid after being validated by validators from 2 teams of experts, namely media experts at 89.7% and material experts at 68.7%, which means that learning media based on Microsoft Sway is "valid" to be developed. The response of the Microsoft Sway learning media by the teacher stated that it was very practical with an acquisition percentage of 88.3% and the students' posttest scores increased from an average of 1.93 to 4.02 with less to good criteria. The results of this study were obtained because Microsoft Sway learning media can add text, images, documents, videos, charts or content types. This is the same as the development of researchers, namely where in its development, researchers make Microsoft Sway learning media consisting of seven parts.

The initial section of the instructional material has a cover that incorporates visual imagery and textual content pertaining to the subject matter to be imparted. The subsequent section comprises visual representations depicting the occurrences pertaining to the subject matter being instructed. Sections 1 and 2 serve to facilitate the child's foundational understanding in preparation for subsequent stages of educational development. The third section of the study presents a narrative constructed by the researcher. Narratives have been recognised as a potent tool for imparting knowledge to young individuals, enabling them to assimilate moral lessons embedded within the stories. According to the findings of Asfandiar et al. (2013), it has been demonstrated that youngsters are highly susceptible to influence through narratives and fairy tales. This intervention may also contribute to enhancing children's cognitive retention when acquiring knowledge about natural events.

The fourth contains a video of the process of natural phenomena that will be taught. The video was made using the Canva application or can be taken directly to YouTube. This animated video contains several images that have been processed by displaying motion and audio to make it look alive in conveying learning material. Video displays are useful for children, namely being able to describe the process of natural phenomena occurring in a short time and then being able to repeat as much as possible and being able to make it interesting to clarify learning.

The fifth contains pictures of actions if natural phenomena occur. The sixth part contains prayers in the form of pictures and sounds regarding natural phenomena that occur. Sections five and six are given to children so that they can take action independently if an earthquake occurs, because teachers cannot control all children when an earthquake occurs. The sound given to the child is used to more easily memorize prayers for natural phenomena and when the child's prayer is pronounced correctly. The seventh part adds an assessment which consists of interactive quizzes aimed at testing children's understanding of material related to natural phenomena. This is in accordance with research conducted by Haning and Laila in (Wulandari 2018), Assessment is a cognitive test used to determine children's learning outcomes during the learning process, helping educators determine whether students understand or misunderstand the material.

Based on this discussion, it can be concluded that practical and effective learning media for use by teachers and implemented by children and Microsoft Sway learning media is a form of teacher professional development in utilizing technology.

4. CONCLUSION

Development of learning media based on Microsoft sway "valid" to be developed. The teacher's response stated that the Microsoft Sway learning media makes it easier for teachers to deliver learning material using language that is simpler and easier for students to understand. The results of the pretest and posttest conducted stated that the Microsoft Sway learning media was effective for students. This research is different from other studies because the learning videos were made by the researchers themselves so that the videos shown are simpler and easier for children to understand. However, from these results, learning media still has deficiencies, namely, when this media is distributed to parents, parents cannot open it because they do not have a Microsoft email. Then the teacher must take action, namely registering the guardian's cellphone email. When exporting a Microsoft Sway presentation to a Word or PDF format for storage on a laptop, the multimedia elements such as videos and audio files are rendered as static images and cannot be played. Subsequently, the utilisation of Microsoft Sway-based educational materials is contingent upon access to an online network. Recommendations for fellow researchers Further investigation can be conducted by other researchers, employing alternative dependent variables.

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