



# Development of Learning Media Digital Pop-Up Book Based Interactive Powerpoint Material Hearing Material Grade Five Elementary School

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**Abstract:** The creation of pop-up book learning materials based on PowerPoint can improve learning results and student interest. The purpose of this study was to determine the feasibility pop-up book learning materials based on PowerPoint and its effect on students' listening comprehension on sound-based material. This research is a development research (R&D) using the ADDIE model development design, which consists of five stages namely analysis, design, development, implementation, and evaluation. The results showed that the effectiveness of PowerPoint-based pop-up book was 97% based on the average validation of media experts, 95% based on the validation of teaching material experts, 95% based on the results of the classroom teacher response questionnaire and 95% based on the results of the student response questionnaire. Pop-up books with a PowerPoint foundation fall under the category of educational resources that are useful for learning. The N-gain test results also show that the learning media developed by researchers are in the very feasible category. In other words, it can be concluded that PowerPoint-based pop-up book learning media is effective, practical and efficient in improving student learning outcomes in elementary schools.

**Keywords:** Digital; Hearing material; Learning media; Pop-Up Book

## Introduction

The development of the industrial revolution 4.0 as it is today, so that human resources are needed to be able to compete globally. With the development of the quality of human resources, it can be done through educational institutions (Lase, 2019; Majid et al., 2020; Sumiyati et al., 2020). School institutions are one part of formal institutions. Teachers have an important role in providing lessons to students to influence interest in learning, because not a few students ignore learning due to monotonous, boring lessons, and others (Alpian et al., 2019). Facing the era of the industrial revolution 4.0, we need education that is creative, innovative, and competitive in competing. We can take advantage of this

rapidly developing technology. Lase (2019); Putri, et al. (2021), stated that the education sector has used digital technology as a tool and part of the facilities that can support learning in schools (Danisworo, et al., 2019; Zuhdi, et al., 2021).

Education is an important component of national development because it encourages growth and improvement of skills and improvement of human dignity and quality of life (Yanto et al., 2023). Education is a goal to change attitudes and behaviors to produce quality generations in the future as well as improve learner and educational activities (Adnyana, 2023; Fatimah & Sutisna, 2023).

The education system is a strategy that can be used in the learning process to achieve the goal that students

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are able to be active in developing their potential (Anwar, 2018). Learners become subjects who have the ability to actively seek, process, and be able to use knowledge during the learning process (Mantoviana et al., 2023). The tools used in the learning process to convey information in the form of material have a big role as well as benefits in making it easier for students to receive the information provided, in utilizing computer technology to be one of the delivery of information in the form of material through learning media.

IPAS is one of the developments in the independent curriculum, which combines science and social studies materials into one lesson (Qifsy et al., 2023). IPAS can help students to foster curiosity about the phenomena that occur around them. This curiosity is what triggers students to learn how the universe works and how it interacts with human life on earth. IPAS learning requires students to memorize and understand material. Memorizing quite a lot of material makes students feel bored to learn. Generally, teachers only use the lecture method (Hastiwi et al., 2023).

Along with the development of technology as it is today, media is an inseparable part of the learning process, so that teachers can utilize learning media to be more effective in building students' mindsets in understanding learning materials. Syafti et al. (2021) state that by utilizing technology such as digital-based learning media, it is able to attract the attention of students to be motivated to produce creative ideas that exist in themselves so that it is very effective when used in the learning process (Fikri & Madona, 2018; Mantoviana et al., 2023).

The learning process in the current era is very important in choosing interactive media in accordance with the development of technology. Technology can be utilized in the field of education through various media to enable the delivery of information (Muslimah et al., 2023). The use of technology can be utilized by educators in order to convey information through learning media, so that learning can be directed to students properly.

With the existence of learning media, it is not only a means of delivering information but also functions as a means to stimulate various cognitive and emotional aspects of students in order to achieve optimal learning (Chairudin et al., 2023).

Learning media is a tool used to support the learning process (Hamdan, 2020). According to (Alfianita et al., 2022) Learning media is a means for all teachers to deliver learning materials in schools of higher quality, learning media itself can make it easier for teachers and students to channel or convey learning information messages. Using learning media can increase interest in learning, motivation, and make it easier to understand the material in the learning process (Handriyatma et al., 2021).

Based on the results of the analysis of observations conducted by researchers with interviews and student learning outcomes at SDIT Toyyibah, the problems found are in classroom learning activities. These problems include the lack of use of learning media in classroom learning activities in this era of technological development. Then, the learning methods used often used by teachers using the lecture method, question and answer, and discussion. In the learning material of hearing because of the sound that makes some students less focused on the material presented because of the large amount of reading material that is difficult to understand, finally experiencing boredom and the lack of variety of learning resources which is also a problem in the learning process.

This happens in IPAS learning which can be proven through the learning outcomes of 31 students with 18 children who have not met the KKM. While students who reach KKM there are 13 children with KKM achievement with a score of 70. Some students think that IPAS learning is a difficult lesson to understand.

From the explanation above, to create or make new products by developing learning media can provide motivation to students. The media that will be developed is the Pop-Up Book learning media. The media is in the form of a book that has 2-3 dimensional elements where each part is more prominent than the usual book (Yusron et al., 2020). With the Pop-Up Book media that has many surprises that will channel the imagination of students. Pop-up book is a book that has folds on the pictures or animations inside that have the form of two-three-dimensional layers on each page (Anggrasari & Dayu, 2022). According to Setyanigrum (2020) pop-up book is a unique book media that can develop the potential for motion and interaction through the use of paper in several mechanisms, for example, rolls, slides, folds or rotations in the contents of the pop-up book.

Microsoft Powerpoint is a program developed by Microsoft to enable users to create interactive and innovative learning media (Akbar, 2022). As such, Microsoft PowerPoint can be used in the learning process. This can alleviate and streamline time in helping students understand the material presented, especially in IPAS subjects. In addition, Microsoft Powerpoint is also able to assist in developing students' interest in learning by changing the appearance of Powerpoint to be more attractive, such as making quizzes or moving animation media in Powerpoint (Puspitarini et al., 2019; Sakiah et al., 2021). Media ini juga dapat kita manfaatkan mulai dari komputer pribadi atau sekolah, laptop, atau bahkan sekarang dapat melalui smartphone yang bisa kita buat untuk presentasi yang sesuai dengan kebutuhan pada pembelajaran siswa (Kayal et al., 2022).

In this study, researchers chose to develop a Powerpoint-based Pop-Up Book learning media that will be applied in digital form. The selection of learning media is expected to help students in achieving learning objectives. Not only that, the selection of Powerpoint-based Pop-Up Book learning media can increase student learning and also improve learning outcomes.

Then, with other findings stating that digital Pop-Up Book learning media can provide effectiveness in the learning process (Aini et al., 2021). The use of Pop-Up Book learning media can also motivate students to always be eager to learn, where the media has unique animations and books that move digitally and there are also 2-3 dimensional elements. Other research findings also state that Pop-Up Book learning media based on Powerpoint is feasible and effective to use as a tool in the ongoing learning process (Afandi et al., 2021; Finna et al., 2022; Mordayanti et al., 2022; Silqi & Febrianto, 2022).

Based on the results of previous studies that have been described above, it can be concluded that the Powerpoint-based Pop-Up Book learning media is a medium that can be used in the teaching and learning process because it is feasible and effective to use and can also motivate students to study hard. Therefore, researchers have the aim of developing Powerpoint-based Pop-Up Book learning media on the subject of hearing because of sound in grade 5 DIT Toyyibah.

Method

The research method used in this research is using the Research and Development (R&D) type of research. This type of research is to develop a product and prove it. This research also requires the subjects used, namely teachers, students, media experts, material experts. Mother's research was also conducted at SDIT Toyyibah. Then, this research uses the ADDIE model. The model has 5 stages including analysis, design, development, implementation, and evaluation. The first stage carried

out by researchers is to identify first through teacher interviews, documentation, and documentation of student learning outcomes in grade 5 SDIT Toyyibah.

The next stage is the design stage. This stage is the stage as a designer of the design process carried out for product development which begins with the preparation of books with a 2-3 dimensional structure in the manufacture of Powerpoint-based Pop-Up Book learning media products. The third stage is product development. At this stage, you can continue the design of the product that has been compiled and then developed with the following stages: First, researchers can compile and make products that are developed, namely Powerpoint-based Pop-Up Book learning media. Second, furthermore, researchers can make a validity questionnaire for a team of experts, teachers, and students to find out about the response of the product developed by the researcher. In the validity questionnaire there is also a grid of instruments to be developed. Threed, With a team of experts from media experts and also material experts who can see the validation of the Powerpoint-based Pop-Up Book learning media design developed by researchers.

The next stage is the implementation stage. This stage is to test the feasibility and effectiveness of the developed product. The product development process must be tested with a product validity test which can be carried out by a team of media experts and material experts. Not only that, but also tested by small groups and large groups of 5th grade students of SDIT Toyyibah.

The fifth stage is the evaluation stage. The previous stages in testing a product must have deficiencies in the product developed. With these shortcomings, researchers can make improvements to the products developed so that the products are far more effective and in accordance with the indicators to be achieved. If you have made improvements and declared appropriate, the media can be declared suitable for use in the learning process

Table 1. Media Expert Instrument Lattice

Assessment aspect	Indicator	4	3	2	1
Powerpoint-based Pop-Up Book media display	Animation image quality with 2-3 dimensional elements	√			
	Choosing the right fount and size				
	Clear writing that is easy to read	√			
	Interesting and interactive design				
	Colors that match the learning material	√			
Presentation of Powerpoint-based Pop-Up Book media	Appearance that can increase comfort in learning	√			
	Media skills with minimum specifics	√			
	Media skills	√			
	Media stability	√			
	Ease of media operation	√			
Totally					95

**Table 2.** Material Expert Instrument Lattice

Assessment aspect	Indicator	4	3	2	1
Aspects of material content	Concordance of material with learning outcomes		√		
	Concordance of material with learning objectives		√		
	Accuracy of concepts and definitions	√			
	Accuracy or clarity of images and illustrations			√	
	Clarity of illustrations of 2-3 dimensional objects		√		
Presentation aspect	Comprehensiveness of the concept		√		
Language aspect	Ease in understanding the material		√		
	Appropriateness to the intellectual development of students	√			
	Appropriateness to the emotional level of students	√			
	Grammar accuracy		√		
	Accuracy of spelling		√		
	Appropriateness of the use of terms	√			
Totally					97

**Table 3.** Teacher and Students Response Instrument Results

Aspect		Description	Score			
			4	3	2	1
Content	The Powerpoint-based Pop-Up Book media includes material that is suitable for hearing because of sound.		√			
	With the Powerpoint-based Pop-Up Book media in the learning process can help increase students' interest in learning		√			
	The suitability of learning objectives with the content of the material on the Powerpoint-based Pop-Up Book media		√			
	The suitability of the content of the learning material on the media that is adapted to the conditions in the learning process		√			
	Powerpoint-based Pop-Up Book learning media can be used flexibly and anywhere.			√		
Media usage	Powerpoint-based Pop-Up Book learning media can add students' interest in learning		√			
	Powerpoint-based Pop-Up Book learning media motivates students to be more enthusiastic in learning		√			
	The use of Powerpoint-based Pop-Up Book media can improve the learning outcomes of students		√			
	The use of images and animations used in the Powerpoint-based Pop-Up Book media is clear.		√			
Media display	The resolution used in the Powerpoint-based Pop-Up Book learning media looks clear and appropriate		√			
	The use of fonts on Powerpoint-based Pop-Up Book learning media is clear and easy to read			√		
	The use of color combinations between images, animations, backgrounds, and fonts is appropriate, so it looks clear		√			
Totally						95

In this study in developing products carried out by researchers by testing hypotheses using inferential statistical methods which are the preparation of data using inferential formulas. So, it can be concluded that from the results of testing through the hypothesis (Dewi et al., 2022).

Furthermore, to determine whether the media developed by researchers in the effective category or not can be done by analyzing the results of measuring test instruments carried out by students from before and after using Powerpoint-based Pop-Up Book learning media using pretest and posttest questions that have been given. In the instrument in measuring these results,

it has previously been tested before giving the test to determine validity. The next step is to find out the difference from the previous results using the t-test which is then continued using the N-gain test to find out from the increase in learning outcomes and the difference in pretest and posttest scores with the maximum results obtained.

## Result and Discussion

In this study, developing learning media products has three main things, namely the Powerpoint-based Pop-Up Book, effectiveness, as well as the feasibility of



the Powerpoint-based Pop-Up Book learning media on hearing material due to sound conducted in class V SDIT Toyyibah. The development of Powerpoint-based Pop-Up Book learning media carried out by researchers uses the ADDIE model which has 5 stages, namely analysis, design, development, implementation, and evaluation.

In the initial stage of analysis, the researcher conducted observation activities, interviews, and data on student learning outcomes in class V SDIT Toyyibah. In the interview activities, there were several questions given to the fifth grade teacher, especially regarding the shortcomings and advantages in the learning process in the classroom as well as student learning outcomes that were still below the minimum completeness criteria or commonly referred to as KKM. In addition, the teacher also discusses the learning media available at the school. So, it can be concluded that the results of the interview conducted with the fifth grade teacher, there is a problem with the less than optimal learning process of listening material due to sound in class V SDIT Toyyibah. These problems are the cause of the lack of interest in learning from students and also the lack of learning media applied at school.

Furthermore, at the design stage which is a scheme or product design developed by researchers through several stages, starting from the preparation of the design of making Powerpoint-based Pop-Up Book media in the form of books with 2-3-dimensional elements, accuracy in the arrangement between the contents of the material, images, and animations. The accuracy of the selection of colors that are clear between fonts, images, and also animations used in making learning media.

Followed by the development stage, at this stage the researcher compiles the creation of Powerpoint-based Pop-Up Book learning media. Then, the results of the media development carried out by researchers can be corrected again before being submitted to the validator team of media experts and material experts. After everything is complete, the product or media developed can be given to a team of experts and also a product validity questionnaire. The validity questionnaire is not only given to the expert team, but also given to teachers and students to see their response to the learning media developed by researchers. The results of the product developed by the researcher, namely the Powerpoint-based Pop-Up Book media can be seen in Figure 1.



Figure 1. Powerpoint-based Pop-Up Book media display

Source:

[https://docs.google.com/file/d/16mcN1Qo1s8NcugREbAOcizfCW1kCMT2t/edit?usp=docslist\\_api&filetype=mspresentati on](https://docs.google.com/file/d/16mcN1Qo1s8NcugREbAOcizfCW1kCMT2t/edit?usp=docslist_api&filetype=mspresentati on)

Furthermore, at the implementation stage, this stage states whether the product developed by the researcher is suitable for use in the learning process. To find out the effectiveness of the media through the implementation stage by giving pretest and posttest questions. With these testing steps, two stages can be carried out before and after using the learning media.

Before the pretest and posttest activities, researchers can provide treatment first with the media that has been developed by researchers. This is done to test the validity of the product that has been developed. The next step, product trials using the dependent sample t-test which can be seen from the comparison of previous results. To find out the increase in student learning

outcomes can be seen from the comparison of the difference in scores obtained through pretest and posttest activities with the maximum difference using the N-Gain test.

The next step is to prove the product developed by researchers by validating the media experts and material experts. The expert team came from PGSD UNNES lecturers. The media expert lecturer is Mr. Moh. Fathurrahman, S.Pd., M.Sn.. Then for the material expert to Mrs. Dewi Nilam Tyas, S.Pd., M.Pd. Media validity does not only require a team of experts, but also to class teachers and students of SDIT Toyyibah Klaten Regency. The trial conducted by students was conducted in class

V with a small group of 6 students and also a large group of 30 students.

The last stage is the evaluation stage. This evaluation stage provides input suggestions given from a team of experts for researchers who are in the stage of developing learning media products. To see the results of the level of feasibility, t-test, and also the N-Gain test in the development of learning media conducted by researchers. The validity results can be seen from table.4, for the t-test can be seen from table.5, and the N-Gain test can be seen from table.6. The table of results can be seen in Table 4.

**Table 6.** N-Gain Test Result

Class	Number of Students	Average		N-Gain	Criterion
		Pretest	Posttest		
Small Group	6	40.83	82.92	0.71	Medium
Large Group	17	51.72	87.42	0.74	Medium

From the results obtained above, it can be stated that the learning media Pop-Up Book learning media based on Powerpoint is included in the category of media that is feasible to use and effective enough to be carried out in the learning process in class V SDIT Toyyibah on the material of hearing because of sound. This study, to prove the effectiveness of the media can be seen from the increase in students' understanding before using the learning media and after using the Powerpoint-based Pop-Up Book learning media on the material of hearing because of sound.

Based on the results obtained in the table above, the Powerpoint-based Pop-Up Book learning media is in very feasible qualifications and is very effective in using learning in the classroom. This is also supported by the ADDIE model which is structured and appropriate for use in this study from analysis, planning, utilization, management, and evaluation. First, by using the ADDIE model which is able to provide an increase in the presentation of student learning outcomes and can be convinced that the Powerpoint-based Pop-Up Book media is suitable for use (Sugiyono, 2019).

Second, the development of Power point-based Pop-Up Book media can be applied to the learning process taking place inside, because the media can provide facilities for students to understand the material much better than without using learning media. In the Pop-Up Book media, there are explanations that are easy to understand, animations, images that have 2-3-dimensional elements that can captivate students' interest in learning more actively (Akhiraningrum & Bektiningsih, 2023; Silqi & Febrianto, 2022)

Third, the presentation of material in the Powerpoint-based Pop-Up Book learning media has been adjusted to the competencies, outcomes, and learning objectives. The existence of this learning media

**Table 4.** Product Validity Test Results

Trial Subject	Validity result %	Description
Media expert test	97	Very Feasible
Material expert test	95	Very Feasible
Classroom teacher test	95	Very Feasible
Learner test	95	Very Feasible

**Table 5.** Product Effectiveness Test Result

Trial Subject	Pretest	Posttest
Small Group Trial	40.83	83.00
Large Group Trial	51.71	87.41

provides a deeper focus on student learning. By using Powerpoint-based Pop-Up Book learning media, it can provide better learning quality. Therefore, with the researchers developing the Powerpoint-based Pop-Up Book learning media is very appropriate to make it easier for students to understand the material and provide enjoyable learning (Yusron et al., 2020)

Fourth, there are previous findings which state that the Powerpoint-based Pop-Up Book learning media is feasible and effective as a tool in the learning process and has the benefit of improving the quality of the teaching and learning process, motivating and attracting the attention of students in learning (Kristianingrum & Radia, 2022)

Previous research also states that Powerpoint-based Pop-Up Book learning media are feasible and effective in the teaching and learning process (Afandi et al., 2021; Akhiraningrum & Bektiningsih, 2023; Finna et al., 2022; Kristianingrum & Radia, 2022; Mordayanti et al., 2022).

## Conclusion

The creation of pop-up book learning materials based on PowerPoint can improve learning results and student interest. The purpose of this study was to determine the feasibility pop-up book learning materials based on PowerPoint and its effect on students' listening comprehension on sound-based material. This research is a development research (R&D) using the ADDIE model development design, which consists of five stages namely analysis, design, development, implementation, and evaluation. The results showed that the effectiveness of PowerPoint-based pop-up book was 97% based on the average validation of media experts, 95% based on the validation of teaching material experts, 95% based on the results of the classroom teacher

response questionnaire and 95% based on the results of the student response questionnaire. Pop-up books with a PowerPoint foundation fall under the category of educational resources that are useful for learning. The N-gain test results also show that the learning media developed by researchers are in the very feasible category. In other words, it can be concluded that PowerPoint-based pop-up book learning media is effective, practical and efficient in improving student learning outcomes in elementary schools.

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### Author Contributions

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### Conflicts of Interest

The authors declare no conflict of interest.

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