



# The Effectiveness of The Local Wisdom E-Module Assisted by The Flipping Book Application in Science Learning, Especially in Vibration, Wave and Sound Material

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**Abstract.** This module is a form of module development from printed to electronic. E-modules that are integrated with local wisdom in science learning are very good, so that learning becomes more meaningful and students more easily understand the material being studied because they bring initial knowledge in the form of understanding local culture into learning. This research aims to describe the effectiveness of using local wisdom e-modules assisted by the flipping book application on vibration, wave, and sound materials. The method used in this research is a quasi-experimental method. The research design used in this research is a "pre-test and post-test one-group design." Class selection for the sample was carried out randomly using the random sampling method. Data was obtained through observation and testing techniques. This observation was obtained through student learning activity data in the form of student attitude observation sheets. This research was carried out using an observation sheet where a check mark (✓) was given in the available check box. Observations were made during the learning process three times, while the knowledge competency assessment uses instruments in the form of pretest and posttest questions. Observations are carried out during the learning process three times. This observation was carried out during the learning process using the Local Wisdom E-Module which is supported by the Flipping Book Application. To assess knowledge competency using instruments in the form of pretest and posttest questions. The research results showed that student activity obtained an average percentage of 88% with very good criteria, and student learning outcomes based on the N-gain analysis test obtained a result of 0.9% (high). This shows that the E-module developed is effectively applied in science learning, especially in vibration, wave, and sound material, because it makes students actively involved in the learning process so that it can stimulate students in the process of forming their learning activities. The e-module can also present study material in a more varied manner and has attractive color combinations so that students do not feel bored or fed up when studying, which makes students more enthusiastic about learning. As a result, learning becomes more fun, and the e-module can be used anytime and anywhere. flexibly.

**Keywords:** local wisdom, e-module, science education

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# 1 Introduction

Developments in the Industrial Era 5.0 can be seen in the large number of people utilizing sophisticated technology and the potential for major changes in various sectors, including education. Technology brings quite significant changes through accessing, disseminating, and using information. This development is an opening for the use of digital learning resources. The use of sophisticated technology in learning activities has become a major concern at various levels of education. The existence of digital technology makes it easier to access learning resources, provides facilities in the form of interactive learning, and increases student involvement in learning activities. A teacher should learn more and use his abilities in the field of technology because it cannot be denied that the world of education will need technology as an important element in supporting the learning process [1] The presence of technology is very helpful in learning; for example, the use of digital teaching materials using technology One of the teaching materials is a module.

A module is a tool or facility used in learning that contains learning material, what methods are used, limits on the material that will be taught in learning, instructions for learning activities, practice questions, and assessment methods that are designed systematically to achieve the expected skills and can be used. independently. A module is also a learning tool that is structured to meet the learning needs of a number of subjects and serve the needs of a particular learning process. A skill or sub-skill is grouped into a module. a complete (independent) module capable of self-study or can be used for independent learning; its use does not depend on other media; it provides opportunities for students to practice and provide summaries; it provides the ability to take tests themselves; and it accommodates students who have difficulty providing follow-up information or feedback [2].

One of the innovations that can be carried out in the world of education due to technological developments related to information technology elements carried out in a learning activity is the development of modules into electronic modules (e-modules). E-modules are the result of innovation from conventional modules with technology, so they are modified to make the display more attractive and interactive so that it attracts readers' interest. E-modules can also be accessed easily anywhere and at any time from various electronic devices, including mobile phones, laptops, and desktops. Thanks to technology, modules are now digital and interactive. The module is interactive because it displays learning in various forms, ranging from text, images, videos, simulations, and animations, and contains quizzes. The development of e-book technology encourages a combination of print technology and computer technology used by teachers in learning activities, including various printed learning materials, including modules that can be converted into electronic form, hence the term e-module [3].

With current technology, many researchers are developing modules with the help of flipping book applications. This application makes it possible to design more interesting teaching materials, different from the conventional teaching materials used. This application helps to make learning more fun, interesting to use and can be used at any time and can improve student learning outcomes. The use of e-modules in learning activities will increase student engagement with the material, facilitate understanding, and enable more varied teaching based on individual learning styles. e-modules can also

be used to measure student understanding through assessments. Learning style refers to each individual's preferences regarding how they obtain, process, and remember information and learning concepts. Understanding individual learning styles is important in education because it can help teachers and students adapt their learning methods to achieve more effective results. Every student has a different learning style. Some are more responsive to visual media, while others prefer an auditory or hands-on approach. Selecting media that takes into account students' learning styles can increase learning effectiveness. Flipbooks can be used as media and learning resources that are used to make it easier for students to learn independently. The use of flip books or the development of the use of this type of media shows that students have a positive perception of media that is integrated through technology, resulting in increased independence and results from learning activities [4].

The development of technology-based media will support learning, but material aspects also need to be considered. Learning based on local wisdom is important to apply to learning. [5] argue that as time goes by, local culture or wisdom and its values are no longer appreciated by today's children. Many cultures in the regions are starting to disappear because the younger generation is not preserving them. student deviant behavior that is not characterized by local intellectual values also occurs due to the lack of implementation of education based on local wisdom values in schools, which is increasingly small, lacks innovation, is only technical in nature, and is not a priority in assessing learning outcomes. [6] argue that local wisdom values are a big asset in efforts to develop human character because a nation with noble morals is a society that has character and always acts with full awareness and self-control. This is one of the basic foundations for the formation of values. Pancasila values.

Learning that is connected to local wisdom can make it easier for students to understand lessons because it relates to their daily habits. Apart from that, the reason why it is important to instill local wisdom in learning is because, as time goes by, foreign culture has also begun to penetrate various regions of Indonesia. On the other hand, Indonesia has great local wisdom as well as very strong cultural values. Taking these values into account, this culture has existed for centuries, so the intellectual values of this culture are highly respected and believed in by local people. The existence of technology also means that foreign cultures can easily enter Indonesia, where everything can be connected easily and quickly. Foreign culture or trends often spread quickly through YouTube, television, and social networks. However, unlike foreign cultures, local wisdom is flexible enough to be easily adapted without having to destroy pre-existing knowledge or local intellectual beliefs. Therefore, even though a foreign culture is present so quickly, this foreign culture is only a temporary trend and cannot replace the existing culture inherited from our ancestors. Furthermore, it also destroys beliefs that have existed for decades, even hundreds of years. As has been said previously, foreign culture is not something that can be simply ignored. But on the other hand, local wisdom, namely native customs and culture, has also been deeply rooted so that it is difficult to remove from society. Trust in local wisdom is getting stronger, allowing us to control foreign cultures that enter. Not only that, we can also filter out foreign cultures that enter easily. In other words, we determine which foreigners can be accepted in Indonesia and which foreign cultures have bad values. Existing local

wisdom may be very traditional, but its existence is important for the local community. Local wisdom can not only be used as a guide in acting and thinking but also as advice and old tips that are passed down, of course, to ensure the life of each generation in a particular area. can run well.

Developments in this increasingly modern era can cause the erosion of local cultural or intellectual learning in Indonesia. In fact, the country has the potential for a variety of local wisdom that can be preserved, especially through learning in schools. seeks to preserve local wisdom by establishing an independent school curriculum; one of the policies is that schools can integrate local content into subjects [7]. According to [8], local intelligence-based learning is learning that is rooted in students' relationships and social environment by connecting learning with everyday life. Therefore, local wisdom-based learning is learning that integrates the local wisdom values found in the surrounding community as an integrated source and foundation for learning activities carried out at school [9].

The research results of [10], show that this online learning module integrated with local wisdom is a tool used in learning that is quite interesting and unique. This is because there has not been much integration of local wisdom into physics learning media. Another similar piece of research is a digital e-module based on local wisdom on the subject of audio and video processing techniques to foster vocational school students' learning motivation. This e-module implements video tutorials, practice questions, quizzes, and example images with the theme of local wisdom [11], Based on this description, researchers are interested in finding out the effectiveness of using the Local Wisdom E-Module assisted by the Flipping Book Application in science learning, especially in vibration, wave, and sound material.

## 2 Method

The method used in this research is the pre-experimental method. Pre-experimental research is a research design that is not yet classified as truly experimental. It is true that in this design, random sampling was not carried out and adequate control was not carried out for confounding variables that had the potential to influence the dependent variable. The research design used in this research is a "pre-test and post-test one-group design," namely that the research only uses one experimental class without a comparison class or control class. The design used in the one-group design is research carried out on one research sample, namely the experimental group, which is given a pretest and posttest treatment. The pretest functions to determine students' initial level of knowledge, while the posttest functions to provide an overview of the Local Wisdom E-Module assisted by the Flipping Book Application on vibration, wave, and sound material. This research was carried out at SMP Negeri 2 Kabila. This research was conducted in the 2023–2024 academic year.

This research consists of four steps. The first step is to give a pretest to the sample class before learning to use the e-module. The second step is to carry out the learning process using the developed e-module, accompanied by an assessment of student activities. The third step of this research is to provide a posttest at the end of the meeting to determine the level of competency achievement of students. The fourth step is to ana-

lyze the data obtained using appropriate statistics to determine the effectiveness of the e-module.

The activity assessment instrument used is an observation sheet, while for assessing knowledge competency, an instrument is used in the form of a pretest and posttest question sheet. Assessment of student activity competency uses an instrument in the form of student performance sheets.

Research data obtained through research instruments is processed and analyzed. The data analysis technique used to determine the effectiveness of the E-Module being developed is analyzed using formula (1). This data analysis process involves several key steps to ensure accurate and reliable results.

$$\text{Final score} = \frac{\text{score acquisition}}{\text{maximum score}} \times 100\% \quad (1)$$

The values obtained from calculations using formula (1) were then analyzed further using quantitative descriptive analysis methods. This analysis was carried out by referring to the assessment categories set out in Table 1 in accordance with the guidelines from [12].

**Table 1.** Criteria for assessing student learning outcomes

Intervals	Category
0-50%	Very Low
51-60%	Low
61-70%	medium
71-80%	high
81-100%	Very High

To analyze pretest and posttest data, the n-gain analysis method was applied using the formula referred to in [13]. This process involves several steps to ensure accurate evaluation of the student's improvement in understanding or skills after the learning intervention.

Next, the normalized N-Gain results are classified into three categories based on the guidelines provided by [14]. This classification is detailed in Table 2 and aims to facilitate the interpretation of improvements in student learning outcomes after learning interventions. The normalized N-Gain values are categorized into three levels to provide a clearer picture of learning effectiveness. This classification helps in identifying how much improvement has been experienced. by students. By grouping the N-Gain values, it can be seen whether the learning intervention was successful in improving students' understanding significantly, moderately, or minimally. The classification process is carried out by collecting all the calculated N-Gain values, then grouping them based on predetermined limits. The results are then summarized in Table 2.

**Table 2.** Normalized Gain Criteria

Skor ( $\langle g \rangle$ )	Normalized Criteria
$\langle g \rangle > 0,7$	High
$0,7 \geq \langle g \rangle > 0.3$	medium
$\langle g \rangle \leq 0.3$	low

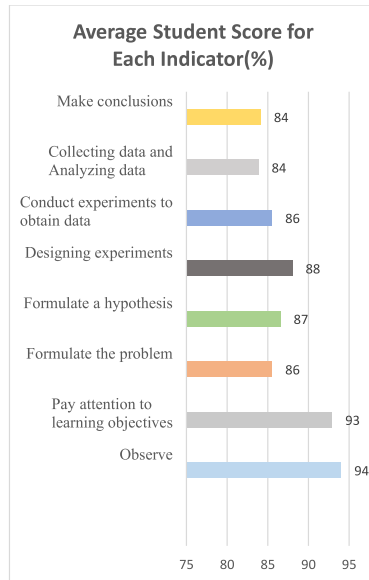
An e-module is said to be effective if the gain score is 0.7 (high category).

### 3 Result and Discussion

The aim of this research is to determine the effectiveness of the Local Wisdom E-Module, assisted by the Flipping Book application. The assessment of the effectiveness of the Local Wisdom E-Module using the Flipping Book application was carried out through thorough observations of student activities during the learning process. In this research, three independent observers were tasked with assessing student activities. The assessment was carried out during three meeting sessions, where students used the Local Wisdom E-Module with the help of the Flipping Book application as a learning medium. At each meeting, observers observe various aspects of student activity, such as level of participation, interaction with the material, understanding of the content, and engagement in discussions and assignments. To record and assess these activities, observers use previously prepared observation sheets, which are specifically designed to measure various indicators of learning effectiveness. Observations are made carefully to ensure that the data collected reflects actual learning conditions. Observers note every relevant detail and provide an objective assessment based on established criteria. The results of this observation sheet are then analyzed to determine how effective the Local Wisdom E-Module supported by the Flipping Book application is in increasing student activity and understanding. With this method, assessment does not only focus on students' final results or academic achievements, but also on the learning process they are undergoing. This provides a more comprehensive picture of how the use of technology and local wisdom approaches in the E-Module can support the teaching and learning process, as well as how students interact with and respond to the material presented through the application. The results of this assessment will be very valuable for identifying the strengths and weaknesses of the Local Wisdom E-Module and the Flipping Book application, as well as providing input for future improvements.

On the student activity sheet, there are eight indicators that are assessed: observing, listening to learning objectives, formulating problems, formulating hypotheses, designing experiments, conducting experiments to obtain data, collecting and analyzing data, and drawing conclusions. All these indicators have been adapted to the guided inquiry learning syntax supported by the Flipping Book application, which has previously been carefully designed. This adjustment process ensures that each indicator is aligned with the stages and methods of guided inquiry learning, so that students can more easily follow the learning flow and achieve the expected educational goals. With the help of Flipping Book, learning becomes more interactive and interesting, allowing students to be more involved in the process of knowledge exploration and discovery. This technology integration not only supports learning effectiveness, but also improves students'

learning experience, making it more dynamic and contextual in line with technological developments and modern educational needs. This research was conducted in three meetings. The average value of student activity for all indicators carried out in the three meetings is shown in Figure 1 below.



**Fig. 1.** Average Student Score for Each Indicator

Figure 1 shows that the average score of all indicators is categorized as very high because the value range is above 81%. The highest average value for the indicator was found in the observation indicator, which reached 94%. This shows that in the observed learning process, the observation aspect received the highest assessment compared to other indicators. So students are very good at observation activities using their five senses. Furthermore, the second highest indicator is the indicator of paying attention to learning objectives, obtaining an average score of 93%. This is because students easily understand what goals are obtained or aimed at in learning. The third highest indicator is the design of an experiment, with an average value of 88%. Based on the data, students are considered capable and skilled in designing activities or experiments that will be carried out well. This shows that students are able to apply the cognitive level of Anderson's revised Bloom's taxonomy, namely creating (C6), so that it is categorized that the students' high-order thinking skills are very good. The ability to combine various elements into a new, complete and more complex form, or create something innovative from existing materials, is known as the creating category (C6) in cognitive taxonomy. This category reflects the highest level of critical and creative thinking skills, where individuals not only understand and apply existing knowledge, but are also able to explore, modify, and expand those concepts to produce original products or ideas. This

creative process involves divergent thinking, which allows individuals to see various possibilities and make connections that were previously invisible, resulting in new solutions or creations that provide significant added value. The three cognitive processes that are aspects of creating are formulating, planning, and producing [15]. The process of higher-level thinking can occur when one is able to connect newly obtained data with old data that has been stored in one's memory. The data is then connected, and modifications are made in order to achieve a goal or respond to difficult situations [16]. In line with that, Resnick [17] defines high-level thinking processes as general reasoning to describe material, such as drawing conclusions, analyzing, and connecting related to the most basic mental activities. It can be concluded that HOTS is the ability to influence a person's basic reasoning and imagination so that they have choices in solving a problem. A person with high-level thinking ability must be able to analyze, connect, solve problems, and solve problems with the aim of producing new solutions or thoughts. HOTS refers to a skill in thinking that goes beyond memorizing facts or concepts [18].

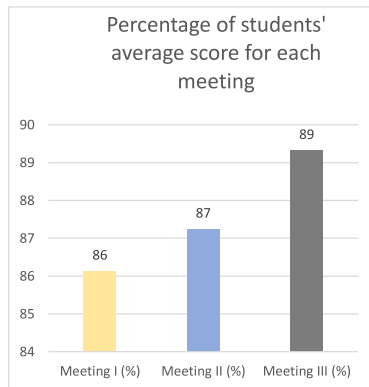
The fourth highest indicator in Figure 1 is the indicator of formulating a hypothesis. The ability to form hypotheses about the cognitive domain of Bloom's Taxonomy is included in C5 (evaluation). According to Krathwohl in [19], one of the indicators for measuring high-level thinking abilities in the cognitive domain C5 (evaluation) is to build a hypothesis. According to [20], the potential for thinking begins with each individual's ability to guess or predict something (hypothesize) about a problem. When someone can prove their assumptions, they gain a perspective that can encourage deeper thinking. Therefore, students' ability to form hypotheses must be trained. The indicator for formulating a hypothesis with an average value of 87% is categorized as very high. This shows that the ability to provide arguments regarding temporary conjectures before carrying out an experiment is very good; students are able to search for scientific answers and adapt appropriate hypotheses to solve the problems given. This happens because students have the courage to ask questions and are able to understand the e-modules provided, so they are active and always take the initiative to ask friends who are considered more capable in class, making it easier to form cooperation between students in finding solutions to problems. Indicator. The fifth highest indicator, namely the indicator of formulating problems and conducting experiments to obtain data, was 86% and was categorized as very high. Indicators for formulating problems are at the cognitive level of Bloom's Taxonomy, which formulates problems including C4 (analysis), namely indicators for measuring high-level thinking abilities. The indicator for formulating problems is categorized as very high because students' ability to formulate problems is very good at making clear questions about a particular problem that is considered interesting and can be studied further. Problem formulation is a step that can determine the direction of research. From the problem formulation, you can see the scope of an experiment to be carried out and the research objectives. Indicators related to students' ability to carry out experiments are categorized as very high because students have demonstrated extraordinary intellectual and physical skills in using tools and materials effectively. This indicates that students not only have a deep understanding of the concepts involved in the experiment, but are also able to apply that knowledge in a practical and skilled way. This ability reflects the level of students' readiness to face learning challenges that require practical skills and deep understanding, which directly

reflects the quality of the education they receive. Thus, the classification of the indicator as very high indicates that students have successfully mastered the skills necessary to carry out experiments well, which is a significant achievement in the context of scientific learning.

The sixth indicator, namely the indicator for collecting and analyzing indicator data, draws conclusions with an average value of 84%, so it is categorized as very high. The indicator of collecting and analyzing data is a high-level thinking skill in the cognitive domain C4 (analysis), which involves analyzing incoming information and dividing or compiling it into smaller parts to recognize patterns or relationships. The data collection and analysis indicator received a very high score because students were able to answer all the questions contained in the e-module and questions in the experimental activities carried out, as well as connecting the experimental data with relevant theoretical studies. The indicator for drawing conclusions from observations is the ability to draw conclusions from the cognitive domain of Bloom's taxonomy, including C5 (evaluation), namely accepting or rejecting a statement based on predetermined criteria. From the experimental results, the results obtained from drawing conclusions were classified as high because students were able to state when the hypothesis was accepted for the right reasons and were able to draw conclusions correctly. The process of describing findings obtained based on the results of hypothesis testing [20]. The percentage value of all average indicators obtained a value of 88%. This shows that the students' activities are categorized as "very good". So it can be concluded that the e-module developed is effective. This is in accordance with [21]view. These results show that students' activities during the learning process with the Local Wisdom E-Module assisted by the Flipping Book application are said to be effective if the percentage falls within the "good" and "very good" criteria. This is because learning using e-modules can be done more flexibly; that is, they can be accessed anytime and anywhere, so students do not have to have difficulty using textbooks because they can be accessed via their cellphones. The e-module used has an attractive appearance because it contains many colors in the display of the images used and can be adapted to images related to local regional wisdom so that it is easier for students to understand them. Integrating local wisdom into science learning is a very good thing because it creates an interesting learning atmosphere, which increases students' learning motivation.

Local wisdom can be included in learning activities so that meaningful learning can be formed. This has an impact on students, so that a student has a clear understanding of the knowledge they have acquired and can increase their caring attitude towards the environment or local area. This is in accordance with the view of [22]. The value of local wisdom plays an important role in increasing students' interest in learning, helping them learn according to their stage of cognitive development, as well as understanding the great benefits of science, especially mathematics, in everyday life. Apart from that, students will know and appreciate local wisdom, and through this learning, it is hoped that they will be able to have good morals and morals in accordance with local wisdom, as well as appreciate the differences and diversity of Indonesian culture. Apart from academic aspects, recognition and appreciation for local wisdom are also an inseparable part of the learning process. Students are invited to recognize, understand, and appreciate the cultural values around them. In this way, they not only gain

academic knowledge but also important moral and ethical values. Local wisdom often contains noble moral teachings, which, if instilled in students, can help them develop good morals. Learning based on local wisdom also plays a role in fostering an attitude of respect for the cultural differences and diversity that exist in Indonesia. In a country as culturally diverse as Indonesia, it is important for students to learn to appreciate and celebrate differences. Through introducing various local wisdom from various regions, students can understand that each culture has uniqueness and valuable values. Thus, it is hoped that through learning that integrates local wisdom, students will not only become smarter academically but also become individuals with good morals, noble character, and a tolerant attitude towards cultural differences. Integrating local wisdom into education is a strategic step to form a young generation who is knowledgeable, ethical, and cultured and who is ready to face global challenges without forgetting their cultural roots. Education based on local wisdom is very relevant for developing life skills by building the empowerment of local skills and potential in the region. In a local wisdom-based education model, learning materials must be highly meaningful and relevant in order to truly empower students' lives, based on the realities found in the field. Local wisdom-based education is education that teaches students to always be sensitive to certain situations they encounter. When faced with concrete problems and situations, students will be more challenged to think critically about them. When studying, students must be taught that humans not only live but also exist; therefore, they are motivated to try to overcome their limited circumstances. In this case, students must be taught that they were born into this world and not just live and die [23]. This has the impact of making learning fun, and students do not feel bored with learning activities. The average value of each meeting for all indicators can be seen in Figure 2 below.



**Fig. 2.** Average percentage value of student activity for each meeting

Figure 2 shows that the percentage value of student activity for each meeting held in 3 meetings shows that there was an increase from 86% at the first meeting, then increasing to 87% at the second meeting, and ending at 89% at the third meeting. The increase for each meeting was due to the fact that at the first meeting, students were still

adapting to learning with the Local Wisdom E-Module assisted by the Flipping Book application, which was relatively new for students because previously, students had not used the Local Wisdom E-Module assisted by the Flipping Book application, but they did it more often. using textbooks used in learning, so that time is needed to adapt to their use. However, at the second meeting, there had been an increase in its use. This shows that students are starting to get used to using the e-module application used, and at the third meeting, there has been an increase from the second meeting. This shows that students already appear proficient in using the Local Wisdom E-Module, assisted by the Flipping Book application. Assessment of students' knowledge competency is seen from the pretest score at the first meeting and the posttest at the last meeting. The results of the analysis of students' gain scores and classical completion for testing the effectiveness of the Local Wisdom E-Module assisted by the Flipping Book application are explained in Table 3.

**Table 3.** Knowledge competency analysis with gain score

Activity	Completeness (%)	Average value	Gain score	Explanation
Pretest	0	13	0,9	High
Posttest	90	87		

Table 3 shows that the students' classical knowledge competency completion was more than 85% during the posttest, whereas during the pretest none of the students completed it, and the gain score of 0.9 was in the high category. Thus, the e-Local Wisdom E-Module, with the help of the Flipping Book Application on vibration, wave, and sound material, was declared effective in increasing students' knowledge. The e-module is effective because the use of the e-module means that students will always be actively involved in the learning process and the use of e-books can stimulate students in the process of forming their learning activities. This is supported by [24]. Online modules such as the Local Wisdom E-Module, assisted by the Flipping Book application, are one of the factors that stimulate students in the process of forming their learning activities. Student activity in learning is a very important element in determining whether learning is effective or not so that they can develop their potential. This opinion means that e-modules as a learning resource for students play an important role in increasing student activity in the learning process. So, it can be said that if we look at students' activities during the learning process, the Local Wisdom E-Module, assisted by the Flipping Book application, is effectively used in the learning process in the classroom. because the electronic modules used can present study material in a more varied manner and have attractive color combinations so that students do not feel bored or fed up when studying and help students easily understand the material presented. This has an impact on the learning process being effective and meaningful, which will improve student learning outcomes. This is in line with [25] who argue that the learning process will be effective if students are actively involved in meaningful tasks and interact with the subject matter intensively.

Learning using e-modules based on flipping books makes students enthusiastic about learning, so that learning becomes fun. This is supported by the results of research

conducted by [26], which show that the development of digital flipbook media is very useful and plays an important role in learning activities at school so that students look enthusiastic and happy while learning. Learning using e-books has many benefits. One of the benefits obtained is that it helps educators present learning in digital form and can be used anywhere, anytime, without space or time limitations. This is supported by the opinion of [27]. The visible benefit of using digital flip book media is that this medium is very practical and easy to access, and the material is easy for students to understand because it is in visual form. such as animation and pictures, increase students' interest in reading and make them more active and interactive because of the video screen and questions. This media makes it easier to convey material through the teacher and is easy to use at any time. This learning medium has advantages in its application, namely that the learning process becomes meaningful, students can integrate new creative ideas into previously obtained information, and students can work together with teams to achieve learning goals [28]. The use of digital flipbooks makes students interested and curious about the media displayed; this is in line with the view of [29], that flipbooks are a way of presenting learning material in virtual format. Flipbooks can present learning material in text form, images according to the contents of the document, animations with lots of colors, links, videos, and different background sounds to attract students' attention and are highly appreciated by students, especially in 21st century learning. Students must be familiar with the use of different technologies in learning. Furthermore, according to Sugiono, research by [30] stated that with this interactive e-module, the learning process will display audio, video, and image displays that are easy to understand so that they can be used as good learning aids. Other research that supports [31] shows that the use of e-module teaching materials based on local wisdom is effective in improving student learning outcomes. Teaching materials designed by integrating local regional wisdom and technology are able to attract students to focus more on learning so that student learning outcomes can achieve mastery in learning.

## 4 Conclusion

Based on the results of research on the effectiveness of the Local Wisdom E-Module assisted by the Flipping Book Application on vibration, wave, and sound material, it shows that student activity obtained an average percentage of 88% with very good criteria, and the N-gain test obtained a result of 0.9% (tall). Based on this, the Local Wisdom E-Module, assisted by the Flipping Book Application, was declared effective in science learning, especially in vibration, wave, and sound material, because it makes students always actively involved in the learning process so that it can stimulate students in the process of forming their learning activities. The e-module can also present study material in a more varied manner and has attractive color combinations so that students do not feel bored or fed up when studying, which makes students more enthusiastic about learning. As a result, learning becomes more fun, and the e-module can be used anytime and anywhere. flexibly.

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