The Development of an Integrated Interactive Digital Physics Module for the Larung Sesaji Culture of the Coastal Community of Jember Regency

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ABSTRACT

The development of a digital physics module integrated with the offering culture of the coastal community of Jember Regency is based on the need for learning media that is able to link physics material with the phenomena that exist around students. The purposes of this media development are: (1) to describe the procedure for developing a digital physics module that is integrated with the local wisdom of the coastal community of Jember Regency, (2) to describe the validity of the module developed, (3) to describe the effectiveness of the module developed by the researcher. This research is a type of research and development (R&D) adapting Nieeven's development model. The digital module was developed with the help of Articulate Storyline 3 software. The respondents of this study were students of class X MIPA SMA Plus Al-Azhar Jember. The selection of islamic boarding school was aimed at preserving regional culture in the islamic boarding school environment and to ward off the views of modernists who think that islamic boarding school tend to be closed to use technology in the education. The Procedure for developing physics module consists of 3 stages, there are preliminary research, prototyping stage, and assessment stage until can produce learning media that integrate the culture of Larung Sesaji Coastal Community of Jember with class X physics lesson Newton's Law of Gravity. The researchers module get an average validation score of 3.69. The digital physics module on a small-scale trial got an effectiveness score of 0.53 and on a large-scale trial it got a score of 0.71. Based on the research that has been done, the module developed by the researchers produces a product in the form of Newton Law's of Gravity lesson integrated with the Culture of Larung Sesaji was classified as valid and effective to use to support the physics learning process in schools. The product of this research is a digital module which is a digital physics module that can be used via a laptop or computer that has chrome software

Keywords: *larung sesaji, local wisdom, Newton law's, physics module.*

INTRODUCTION

In essence, physics is a process, and product resulting from natural phenomena studied in-depth and further. Physics learning prioritizes the active role of students in understanding various facts, concepts, and principles of physics that work in every event and phenomenon in everyday life. In physics learning, the result of thinking is not the only thing that is the main thing, but the process of finding these results is also fundamental. It is related to honing one's ability to understand natural phenomena that occur. Suppose the ability to understand concepts possessed by students is still lacking and not yet capable. In that case, students will be constrained in accepting and understanding the physics material presented by the educator. So, it is not enough to learn from books or hear explanations from teachers or other people in learning physics. But there must be skills to train students in finding their concepts (Kamila et al., 2020: 164).

A mature understanding of the concept of a physical phenomenon around students gives the meaning that the purpose of learning physics is not just rote memorization but is broader than that. Learning integrated with the environment where students live makes learning activities more interesting and fun and allows students and educators to participate more actively because it is based on the culture, they were previously familiar with. The learning outcomes obtained are more optimal. The concept of integration is actually in the form of integration-interconnection. Integration is a necessity or a necessity. Meanwhile, interconnection is a scientific approach that cannot stand alone. So integration-interconnection is an approach that seeks or emphasizes that all scientific fields are interrelated. (Rahmawati & Bakhtiar, 2018: 197).

A culture that is directly related to the life of the local community is known as local culture. The use of local cultural aspects in learning is one solution that can be used to overcome problems in the learning process related to the quality of the learning process, especially regarding students' understanding of physics concepts. Science education can develop by making the uniqueness and advantages of an area a foundation, including traditional culture and technology owned by the community. (Kartono et al., 2016). Indigenous Science or better known as community science knowledge, is a form of knowledge possessed by a certain social group or ethnic group that is unique and different from others (Sudarmin, 2014). Some of the terms that are more often heard by the public about indigenous science are local wisdom, knowledge of the local community, local culture, and scientifically more often referred to as ethnoscience. Ethnoscience is known as a term that refers to activities that focus on transforming beliefs that develop in society from generation to generation (original science) into knowledge that can be studied scientifically. (Rahayu & Sudarmin, 2015). Ethnoscience is a method that can be used to apply a cross-cultural approach in teaching and learning activities. Based on explanation (Rosidah et al., 2018) That the approach that is considered appropriate to improve student achievement is an approach using the ethnoscience method.

The ethnoscience method utilizes existing local wisdom to be studied scientifically to be used as a source of knowledge. Local wisdom is a work of the community in the local area, which becomes the identity and distinctiveness of an area. Each region in Indonesia has local wisdom that is unique and varies according to their respective characteristics. Jember Regency is one of the regions in Indonesia that has quite a lot of local wisdom potential but still needs further development. One of the tourism potentials of local wisdom owned by the community in Jember Regency is the Larung Sesaji Culture of Puger Beach. Larung offerings on Puger Beach are routinely preserved every year in the Month of Muharram or what is known as Bulan Suro based on the Hijiriyah calendar in Javanese terms. This culture is carried out once a year and is still preserved by the Puger Coastal community until now. Culture as a social heritage has the essence of being only owned by citizens by studying it.

One of the problems regarding understanding students' physics concepts can be overcome by exposing students to the phenomena around them. The process of receiving abstract material will be faster by using the media compared to lectures without tools (Rusman, 2012). One form of media that can support physics learning in schools is a module. Modules are designed systematically based on the curriculum and packaged in the smallest learning unit and allow it to be studied independently in a certain time unit. Modules are considered effective in achieving learning objectives because, in preparing, the modules are planned to assist students in achieving learning objectives. (Pornamasari, 2017: 75). The module has the following functions: 1) independent teaching materials, 2) substitute for the function of educators, 3) evaluation tools and 4) student referrals (Prastowo, 2014: 107-108).

One form of a module that is considered effective to support learning, especially during the COVID-19 pandemic, is an interactive digital module. Interactive modules result from various media in the form of audio, text, graphics, images, and videos that are displayed so that students (users) engage in two-way interaction directly with the modules being studied. (Nasyriyah, 2016:

23). This interactive digital module combines various audio-visual media designed to make the learning process more interesting and fun in achieving learning objectives. The media that is considered suitable for developing a digital physics module is the Articulate Storyline 3 software. Based on research conducted by Pratama (2019) shows that the learning media based on Articulate Storyline gets a positive response from students, evidenced by an increase in learning outcomes. In addition, other studies have also been carried out by (Irwandani et al., 2017) by using the same software on physics material, circular motion, students become more interested in learning physics after using the module that the researcher has developed. This is the basis for researchers to develop digital learning media accompanied by local wisdom of Larung Sesaji culture based on Articulate Storyline software. *3*. The use of this software is expected to overcome existing learning problems related to student learning outcomes by making the physics learning process more enjoyable. Feedback from students in the form of an evaluation at the end of the learning stage using media developed with Articulate Storyline 3 software will make students' learning outcomes known faster by educators and more effective and efficient when compared to conventional tests. In addition, the use of technological sophistication is currently very much needed because it can help overcome the destruction of nature. For example, it will reduce the use of paper as a book in learning or better known as the concept of paperless learning.(Anantyarta & Sholihah, 2020).

Learning media applications accompanied by knowledge of local wisdom will organize the existing physics material by linking it to the knowledge of local wisdom in the environment around students. The advantages of Articulate Storyline 3 software-based learning media are 1) it is more interesting and interactive because it presents abstract material that becomes real, 2) knowledge of local wisdom will make students understand the physical phenomena around them better, 3) The existence of an evaluation in this software will make it easier for teachers to assess which students can understand the physics material contained in the software, 4) the existence of this software will allow students to learn independently by repeating the material that has been explained by the teacher and to prepare the material in the next meeting because the learning process from the presentation of the material to the evaluation is contained in the learning media. While the drawback of this application is that students must have adequate supporting facilities and infrastructure such as mobile phones or laptops, this is an obstacle for students who are still not supported by these facilities and infrastructure.

Physics learning requires visualization and is related to the local culture of Larung Sesaji Pantai Puger, one of which is Newton's Law of Gravity. Newton's law of universal gravitation states that "every particle in the universe attracts every other particle with a force that is directly proportional to the product of their masses and inversely proportional to the square of the distance between them". If Newton's law of gravity is translated into an equation, it will be obtained:

$$F_g = G \frac{m_1 m_2}{r^2} \quad (1)$$

With:

F_g = gravity force (N)

F_{12} = the gravitational force experienced by the first object due to the gravitational attraction of the second object (N)

F_{21} = the gravitational force experienced by the second object due to the gravitational attraction of the first object (N)

G = universal gravity constant ($6{,}67 \times 10^{-11} \ Nm^2/kg^2$)

m_1 = first object's mass (kg)

m_2 =   second object's mass (kg)

r   =   distance between two objects (m)   (Halliday, dkk., 2018).

On objects that form an angle, the way to determine the magnitude of the gravitational force acting on the object is to describe the vector directions and solve it by finding the resultant magnitude of all the forces. The space between objects with mass will experience the gravitational force caused by objects with mass, called the gravitational field strength. The following is Figure 1, which illustrates formula 1
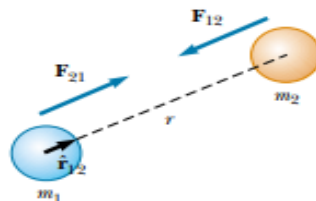
Figure 1. m₁ and m₂ are separated by r

Based on the description of the need for interactive digital learning media as well as elevating the local wisdom of the people in Jember Regency, this study discusses "Development of an Integrated Interactive Digital Physics Module for the Larung Sesaji Culture of the Coastal Community of Jember Regency." The aims of this study were to: 1) describe the procedure for developing an interactive digital physics module integrated with the Larung Sesaji culture of the coastal community of Jember Regency, 2) describe the validation results of the module developed by the researcher, 3) describe the effectiveness of the module after being tested on respondents.

METHODOLOGY

The research used is the type of research and development (Research & Development) that adapts the Nieveen development model. Research and development aim to produce a new product through the development process. (Astutik et al., 2017).

Nieveen (2006), describes the development procedure consisting of 1) Preliminary research, in the form of a preliminary study carried out to obtain an initial picture related to the implementation of research, collecting information about learning needs related to planning and implementing learning in schools, including learning resources used by students; 2) *Prototyping stage*, At this stage, the process of designing the draft interactive digital module along with its design tools and instrumentation is carried out. Draft 1 is composed of cover modules, concept maps, info on digital modules, instructions for using modules, a table of contents, cover materials, module materials, practice questions, summaries, and competency tests. The draft I was then validated and improved before being tested on a limited scale (small scale). Validation is carried out by two expert validators and one user validator. Validation is done by filling out a validation questionnaire sheet that has been prepared by the researcher and then analyzed using the following two formula:

$$V_a = \frac{\sum_{j=1}^{m} A_i}{n} \quad (2)$$

with:

V_a =   total mean of all aspects

A_i =   mean for i-aspect

n =   total aspects

The determination of module validity criteria is based on module validity criteria (Ratumanan & Laurens, 2011). Based on the validity criteria, the module can be said to be: 1) very valid if $3,25 < V_a \leq 4,00$; 2) Valid if $2,50 < V_a \leq 3,25$; 3) Less valid if $1,75 < V_a \leq 2,50$; 4) Not valid if $1,00 < V_a \leq 1,75$, and the last 3) *Assessment stage*, At this stage, a field trial was conducted with more respondents than the limited-scale trial. This trial was conducted to determine the effectiveness of the Draft II physics module, which had been improved in the previous stage. The effectiveness of the digital physics module is known through the results of students' N-gain scores. The N-gain scores of students were obtained from the results of the pretest and posttest given by the researcher consisting of standard questions C3 – C5. The following is formula 3. which is used to find the N-gain score of students:

$$g = \left(\frac{s_f - s_i}{s_{maks} - (s_i)} \right) \tag{3}$$

with :

g = normalized gain

s_f = postest score

s_i = pretest score

The results of the calculations using formula 3, then analyzed to determine the effectiveness of the developed digital physics module (Hake, 1998 dalam Muhroji & Yusrina, 2018). Based on the effectiveness criteria, the module can be said to have effectiveness: 1) high if $\langle g \rangle \geq 0,7$; 2) average if $0.3 \leq \langle g \rangle < 0,7$; 3) and low if $\langle g \rangle < 0,3$. The interactive digital physics module integrated with local wisdom developed by the researcher is said to be effective by reviewing the improvement of students' cognitive learning outcomes, if the minimum level of criteria for learning outcomes achieved is $\langle g \rangle \geq 0,3$.

RESULT AND DISCUSSION

In this section, the results of the development of an interactive digital physics module integrated with Larung culture will be presented, with the subject matter of Newton's Law of Gravity. The interactive module has several characteristics, including; (1) the material delivered in its entirety is a decrease from the basic competencies of the 2013 curriculum; (2) presented in the form of a compact disk (CD) which is combined between text, motion pictures, sound, video; (3) there is a formative test in the form of multiple-choice that can be used as an evaluation of learning outcomes, and (4) it can be used by students independently without the help or guidance of educators (Nasyriyah, 2016: 23).

The trial of the digital physics module developed by the researcher was carried out in high school-based boarding schools. The selection of this pesantren-based school is due to several things, namely the opinion of the moderate community who views that the focus of learning in the pesantren environment is to recognize the content and logic of classical yellow book thinking. The pesantren tradition is seen as tending to be trapped to be limited to preserving, studying, and culting the yellow book, which no longer has relevance to the development of today's era. (Saputera & Tendean, 2020: 14). In addition, it is also an effort to preserve local culture in the pesantren environment, which is considered to tend to reject the traditions that exist in the community. SMA Plus Al-Azhar Jember is one of the schools that meets the criteria for a place to carry out research because it is located in Jember Regency, so it is relevant to the culture that was raised through the digital physics module developed by researchers and also tested at the school to ward off the bad views of modernists towards pesantren-based educational institutions. The development test at SMA Plus Al-Azhar Jember was carried out in January – February 2021 in the even semester of the 2020/2021 school year.

The preliminary study stage of Nieveen's research design development is needed to obtain and collect information related to the implementation of research and determine learning needs related to planning and implementing learning, including learning resources used by students. Problem analysis activities were carried out by observing and interviewing a physics teacher, a physics teacher in class X MIPA, SMA Plus Al-Azhar Jember. Interviews were conducted to determine the learning resources used in the physics learning process carried out at SMA Plus Al-Azhar Jember and the problems encountered during the learning process. The results of the interviews that have been conducted show that in the learning process, the learning resources used are worksheets and textbooks that have been provided by the school. The LKS used only contains a little material in each sub-chapter because most of its contents are in the form of practice questions. The material contained in both the textbook and the LKS has not yet been integrated with the existing culture in Jember Regency, especially regarding the Larung Sesaji Culture of Puger Beach.

The culture of Larung Offerings on Puger Beach is a tradition that the coastal communities of Jember Regency continue to preserve to this day. The community believes that after the fishermen carry out the Larung Sesaji tradition every Suro Month, their marine harvest will increase. When analyzed scientifically, it can be seen that in the Suro month or the Muharram month in the Hijri calendar system, precisely in the middle of the calendar, the moon is in the full phase. One of the effects of this phenomenon is the rising sea level because it is attracted by the moon's gravity which causes fish. The fish also rise to the top, so this is the right moment to catch fish. The phase of the moon affects the tidal phenomenon. Tides affect the abundance of marine life. Sufficient sunlight affects the life of plankton. The abundance of marine life, including plankton, tends to attract fish and be a source of fish food. Seawater temperature affects salinity (level of dissolved salts in water). Salinity (salt concentration) and seawater minerals affect the presence of plankton. If analyzed more deeply, this local wisdom will relate to one of the physical phenomena, namely one of the events in Newton's Law of Gravity. In the physics material, the chapter on Newton's Laws of Gravity discusses the relationship between the positions of the moon, sun, and earth, one of which is the effect of the tidal phenomenon. This tidal phenomenon will later be related to the number of fish caught by fishers.

After knowing the problems students face in class X MIPA Plus Al-Azhar Jember and conducting a literature study, the researchers then compiled the materials that would be loaded into the digital module that would be developed. The material contained in this digital physics module is composed of a material in the physics book by Caspar, David Halliday, Douglas C. Giancoli, Jearl Walker, Mikrajuddin, Robert Resnikc, as well as several relevant journals on research into the analysis of Larung Sesaji Pantai Puger which were reviewed in detail. Making learning media products in the form of interactive physics digital modules is done using Articulate Storyline 3 software, which starts by determining the scene's size to be created, then composes the scene and divides the layers that will be used. The following is Figure 3. about the division of scenes and layers in the Articulate Storyline 3 software.
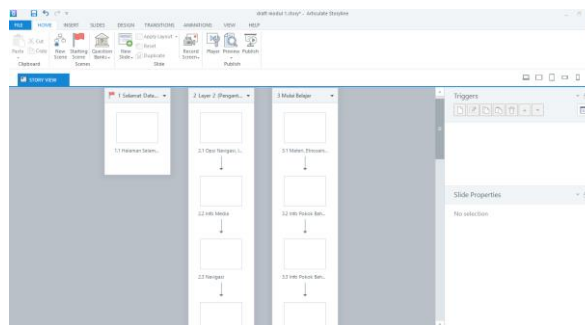

Figure 3. Scene division and digital module layers

After the layout and layers have been divided, the next step is to enter the material until the evaluation has been prepared previously. The process of inputting material into the Articulate Storyline 3 software is shown in Figure 4 below.

Figure 4. The process of inputting material into the Articulate Storyline 3 software.

After all the digital physics module contents and its complementary components have been loaded, the next step is to create the icon buttons. The following is one of the processes for coding the icon button to move to the next later, as shown in Figure 5.
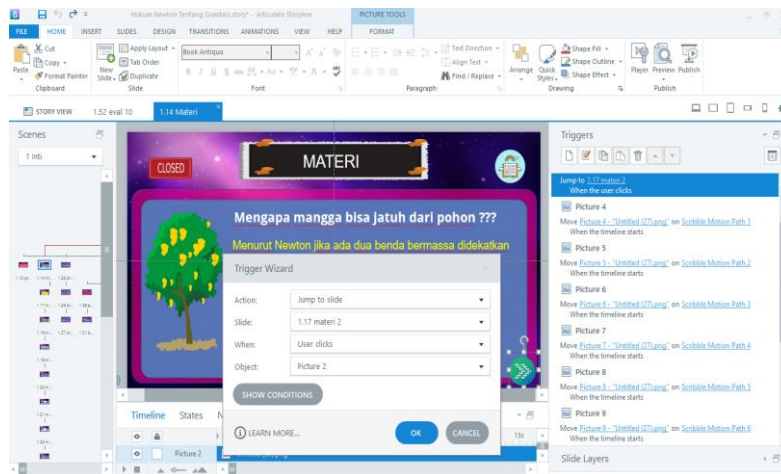
Figure 5. Next icon button coding

The prototyping stage (design stage) produces a draft of 1 interactive digital physics module based on Articulate Storyline 3, which contains material on Newton's Law of Gravity. The steps taken before the digital physics module is tested on students of SMA Plus Al-Azhar is the validation process first. The validation results are based on the assessment given by the validator through a validation sheet. The researcher previously provided the validation sheet, which contains several aspects to be assessed. (Rahmayanti et al., 2016). The validation sheet is used as a reference to assess the appropriateness of the format and substance of the learning model components that have been developed (Fadly, 2018: 148). The purpose of validation is to provide corrections for the shortcomings of the products developed so that the products being developed can be improved according to the advice of experts in the hope that valid modules can be created and used as learning media in schools (Baharuddin & Daulay, 2017).

The first draft of the module resulting from the prototyping stage is then assessed for feasibility by the validator. The validators consist of expert validators, namely two lecturers of physics education at the University of Jember, and one user validator, namely a physics teacher for class X SMA Plus Al-Azhar Jember. The scores given in the assessment consist on a scale of 1 to 4, namely (1) invalid, (2) less valid, (3) valid, and (4) very valid. There is also a place to provide suggestions and comments from the validator on the validation sheet. The values obtained from the three validators were averaged to determine the final expert validation score.

Then the value obtained is referred to as the validity criteria to determine the level of validity of the digital physics module developed by the researcher. The following is Table 3 regarding the results of the validation from three validators.
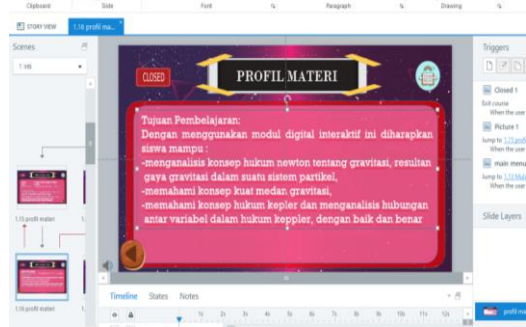
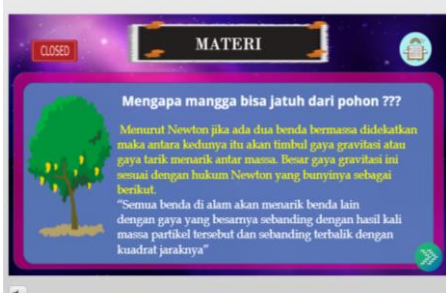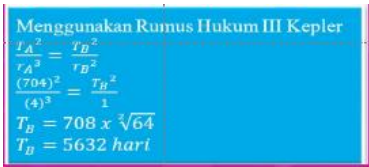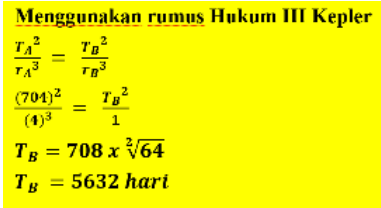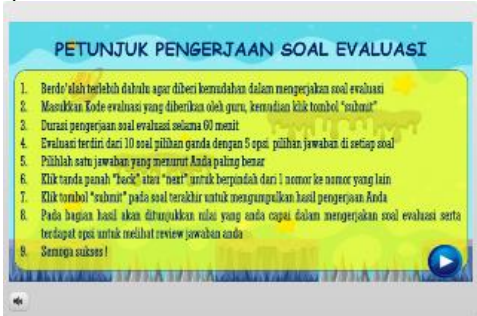**Table.3 The Expert and user validation results for the digital physics module**

No.	Aspects	The Expert and user validation		
		1st Validator	2nd Validator	3rd Validator
1.	Construct	3,45	3,73	3,82
2.	Content	3,67	3,67	4
3.	Language	3,5	3,5	3,83
	Mean	3,54	3,63	3,88

Based on Table 3. The average value obtained from the three validators includes a validation component which includes three aspects, namely construct, content, and language, which is 3.69 with a very valid category. The validation data obtained from the three validators show the analysis results that the average construct aspect is 3.67 with a very valid category. The construct aspect is the suitability of the components in the module with the indicators that have been set and the type and size of the font used. The average content aspect gets a score of 3.78, with a very valid category. Content aspects include the novelty of the module packaging and the module's ability to facilitate student understanding. Then, in the language aspect, the average score achieved is 3.61, with a very valid category. The language aspect assesses the terms and sentences used in the module and whether they are in accordance with the EYD and are communicative.

Corrections and suggestions given by the validator to the product used as material to revise the components both in terms of material and product presentation developed to proceed to the next step, namely small-scale trials.(Lestari & Hartati, 2017). After the validation process is carried out, the module is repaired first according to the suggestions and inputs were given by the three validators. The following are some of the improvements made by researchers, shown in Table 4, regarding module revisions and improvements.

Table 4. Digital physics module revision and improvement

No.	Aspect	Revised components	Improvement Results
1.	Construct	Add some learning objectives in the material info section	Learning Objectives have been added to the digital physics module in the material info section
2.	Language	Explain how to use the module and be given an explanation of the instructions for the stages of studying each part in the module	Giving an explanation of how to use the module in the navigation section
3.	Construct	Improve the writing system in using capital letters	Change the use of capital letters, always use capital at the beginning of sentences.

No.	Aspect	Revised components	Improvement Results
4.	Content	Change the color used	The result of the color change in the discussion section
5.	Construct	Give the instructions for working on evaluation questions	Adding instructions for working on evaluation questions

Based on the validity analysis, the overall average score of the validation results from the three validators was 3.69. When referring to the validity criteria, it can be concluded that the interactive digital physics module based on Articulate Storyline 3, the subject of Newton's law of gravity developed by the researcher, obtained validity results with a very valid category. This is in line with research (Irwandani et al., 2017) the interactive physics digital module developed with the Articulate Studio '13 software is very feasible in terms of material and product presentation to support the physics learning process.

The improved digital physics module was then tested on a limited basis to 6 students of class X MIPA SMA Plus Al-Azhar Jember. The trial was conducted to determine the effectiveness of the first draft of the digital physics module developed by the researcher. The module's effectiveness is obtained from student achievement data in the form of learning outcomes tests. The effectiveness of the developed module can be seen from the results of the analysis of student learning outcomes. (Misbah et al., 2016). Students' learning achievement using the module developed by the researcher is in terms of cognitive learning outcomes tests in the form of pretest and posttest. The pretest is given to know students' knowledge before learning by using an interactive digital physics module based on Articulate Storyline 3. Then the posttest is given to determine students' level of understanding after going through the learning process using the module developed by the researcher.

After conducting a limited-scale trial, the first draft of the digital physics module developed by the researcher was improved to become the second draft of the digital physics module. The second draft of the digital physics module was then tested in the field with 19

students of class X MIPA Plus Al-Azhar Jember. 19 respondents were given a pretest via google form first to determine the students' initial abilities before learning. The activities carried out at the first meeting were working on pretest questions and studying module content from material to ethnoscience studies. Then, at the second meeting, it was continued with practice questions, evaluations, or posttests. The average N-gain obtained was higher than the average N-gain in small-scale (limited) trials in large-scale trials. A summary of the pretest and posttest mean values in learning activities in small-scale and large-scale trials can be seen in Figure 6 on the following graph of pretest and post-test scores.
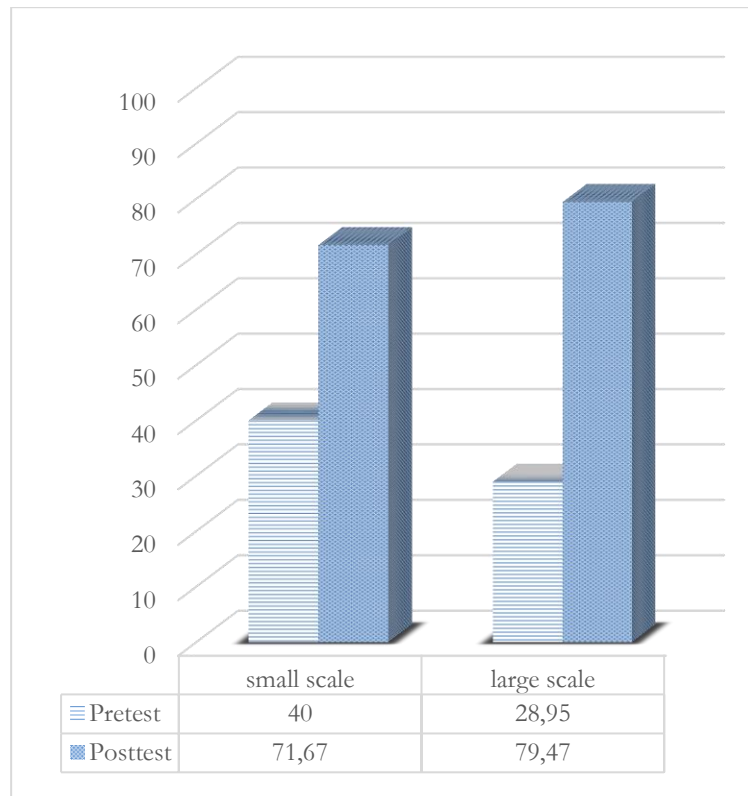

	small scale	large scale
Pretest	40	28,95
Posttest	71,67	79,47

Figure 6. Pretest and posttest graphs for small-scale trials and large-scale trials

Most of the students experienced an increase in learning outcomes after going through the learning process with the digital physics module that the researcher had developed. In the small-scale trial, the students' average pretest and posttest scores were 40 and 71.67. In the large-scale trial, the students' pretest and posttest scores reached an average of 28.95 and 79.47. The pretest and posttest scores in the two trials were then analyzed using the N-gain test to determine the increase in student learning outcomes in the cognitive domain before and after going through the learning process.

In Table 5 below, a recapitulation of N-gain is presented in small-scale trials and large-scale trials.

Table 5. N-gain recapitulation of small-scale trials and large-scale trials

Trial	Pretest	Posttest	*N-gain*	Criteria
Small Scale	40	71,67	0,53	Average
Large Scale	28,95	79,47	0,71	High

Based on the results of data analysis, the average value of N-gain in small-scale trials (limited) obtained a value of 0.53 with moderate criteria. In contrast, the data analysis results of

the average N-gain value in large-scale trials obtained a value of 0, 71 with high criteria. The interactive digital physics module based on Articulate Storyline 3, the subject of Newton's law of gravity, is considered effective in supporting teaching and learning activities of physics in schools. This is in line with research conducted by (Nuraini & Supriadi, 2018) which states that multimedia in learning can improve the ability to master physics because abstract physics and material media can be illustrated concretely and contextually.

The effectiveness of the interactive digital physics module based on Articulate Storyline 3 is determined based on the analysis results from the pretest and post-test tests carried out. Based on the results of data analysis, the average value of N-gain in small-scale (limited) trials obtained a value of 0.53. Meanwhile, the results of data analysis of the average N-gain value in large-scale trials obtained a value of 0.71. Based on the criteria for obtaining the gain index, it is interpreted in terms of medium criteria in small-scale trials. In large-scale trials, it is interpreted in high criteria. If the N-gain is $0,3 \leq g$ then the interactive digital physics module based on Articulate Storyline 3, the subject of Newton's law of gravity, can be declared effective. The existence of material in the form of a description of Larung Sesaji Pantai Puger, which is associated with physics material, makes learning contextual because students understand the relationship between the traditions around them and the material presented through the digital module. An explanation of the relationship between the culture of Larung Offerings on Puger Beach and Newton's Law of Gravity can be seen in the module in the ethnoscience section, which is presented through an animated video and a discussion about the video.

The effectiveness of the digital physics module in small-scale trials and large-scale trials is obtained from the average N-gain value. In small-scale trials, the module's effectiveness is still in the moderate stage because the material presented in the module is still incomplete, so the module is repaired first before being used in large-scale trials. It can be concluded that the interactive digital physics module based on Articulate Storyline 3 has effective criteria for improving student learning outcomes, so it is suitable to be used as a learning medium on the subject of Newton's law of gravity.

Based on the results of data analysis related to the interactive digital physics module based on Articulate Storyline 3, the subject of Newton's law of gravity obtained validity with very valid criteria based on expert and user assessments, as well as products developed into effective learning media in terms of the results of improving student learning outcomes. This is in line with research conducted by (Irawan et al., 2020) about the development of physics modules related to the local community's local wisdom, which obtained valid validity criteria and were able to improve student learning outcomes. Based on the results of research and analysis, learning media products in the form of an interactive digital physics module based on Articulate Storyline 3 on the subject of Newton's law of gravity can be used as an alternative solution for supporting media for learning Physics at SMA Plus Al-Azhar Jember.

CONCLUSION

Based on the research that has been done, the learning media in the form of an interactive digital physics module integrated with the local wisdom of Larung Sesaji Pantai Puger was developed using the Nieveen development model R&D research type, which consists of 3 stages, namely preliminary study, design stage, and assessment stage. This research resulted in a development product in the form of an interactive digital physics module integrated with the local wisdom of the Larung Sesaji community, Pesisir Pantai Jember Regency, the subject of Newton's law of gravity that was valid and effective so that it was suitable to be used to support the physics learning process. For further improvement and development, it is hoped that this digital module can be used on iOS devices.

REFERENCES

Anantyarta, P., & Sholihah, F. N. (2020). Pengembangan Multimedia Pembelajaran pada Materi Bioteknologi menggunakan Program Autoplay. *Journal of Natural Science and Integration*, *3*(1), 45–57.

Astutik, S., Susantini, E., Madladzim, & Nur, M. (2017). Effectiveness of Collaborative Students Worksheet To Improve Student ' S Affective Scientific Collaborative and. *International Journal of Education and Research*, *5*(1), 151–164.

Baharuddin, & Daulay, I. (2017). The Development of Computer-Based Learning Media at A Vocational High School. *International Journal of GEOMATE*, *12*(30), 96–101.

Fadly, W. (2018). Validitas Model "Produksi" Sebagai Alternatif Model Pembelajaran untuk Mendukung Kurikulum 2013. *Journal of Natural Science and Integration*, *1*(2), 145–158.

Hake, R. R. (1998). Interactive-Engagement Versus Traditional Methods: A Six-Thousand-Student Survey of Mechanics Test Data for Introductory Physics Courses. *American Journal of Physics*, *66*(1), 64–74.

Irawan, D., Prihandono, T., & Nuraini, L. (2020). Validity of a Coastal Environments-Based Physics Learning Module on the Theme of Temperature and Heat. *Jurnal Ilmiah Pendidikan Fisika*, *4*(1), 7.

Irwandani, I., Latifah, S., Asyhari, A., Muzannur, M., & Widayanti, W. (2017). Modul Digital Interaktif Berbasis Articulate Studio'13: Pengembangan pada Materi Gerak Melingkar Kelas X. *Jurnal Ilmiah Pendidikan Fisika Al-Biruni*, *6*(2), 221.

Kamila, N., Prastowo, S. H. B., & Nuraini, L. (2020). Penerapan Model Application of Step Instruction and Elaboration (APPOSITE) untuk Meningkatkan Hasil Belajar Kognitif Siswa SMA pada Materi Suhu dan Kalor. *Journal of Natural Science and Integration*, *3*(2), 163–171.

Kartono, Hairida, & Bujang, G. (2016). Penelusuran Budaya dan Teknologi Lokal dalam Rangka Rekonstruksi dan Pengembangan Sains di Sekolah Dasar. *Cakrawala Pendidikan*, 343–368.

Lestari, P. B., & Hartati, T. W. (2017). Analisis Pengembangan Bahan Ajar Mikrobiologi Berbasis Inkuiry di IKIP Budi Utomo Malang Analisys on Developing Inquiry-Based Teaching Material for Microbioogy in IKIP Budi Utomo Malang. *Bioedukasi*, *10*(2), 1–6.

Misbah, Wati, M., & Lestari, P. A. (2016). Effectiveness Physics Module Class X Using Cooperative Learning Model With a Peer Assessment. *International Conference on Educational Research and Innovation*, 199–202.

Muhroji, M., & Yusrina, H. (2018). Penggunaan Modul pada Pembelajaran Tematik di SDN 1 Jimbung Klaten. *Jurnal Profesi Pendidikan Dasar*, *5*(1), 1–9. Nasyiriyah, F. 2016. Pengembangan Modul Interaktif Adobe Flash CS 6 Mata Pelajaran Sejarah Kelas X SMA dengan Menggunakan Model 4D pada Sub Pokok Bahasan‖ Perbedaan Candi di Jawa Tengah dan Jawa Timur. Skripsi. Jember: UNEJ

Nieveen, N., Mc. Kenney, & Akker, J.V., 2006. *Educational Design Research.* London: Routledge.

Nuraini, L., & Supriadi, B. (2018). Analisis Pemanfataan Multimedia Terhadap Penguasaan Konsep Reaksi Nuklir Mahasiswa pada Mata Kuliah Fisika Inti. *Saintifika*, *20*(2), 22–31.

Pornamasari, E. I. (2017). Pengembangan Modul Pembelajaran Berbantu Flipbook Maker dengan Model Pembelajaran Numbered Heads Together (Nht) Berbasis Teori Vygotsky Materi Pokok Relasi dan Fungsi. *Aksioma*, *7*(1), 74.

Pratama, R. A. (2019). Media Pembelajaran Berbasis Articulate Storyline 2 pada Materi Menggambar Grafik Fungsi di SMP Patra Dharma 2 Balikpapan. *Jurnal Dimensi*, *7*(1), 19–35.

Rahayu, W. E., & Sudarmin. (2015). Pengembangan Modul IPA Terpadu Berbasis Etnosains Tema Energi dalam Kehidupan untuk Menanamkan Jiwa Konservasi Siswa. *Unnes Science Education Journal*, *4*(2).

Rahmawati, R. D., & Bakhtiar, N. (2018). Pembelajaran IPA Berbasis Integrasi Islam-Sains pada Pokok Bahasan Penciptaan Alam Semesta dan Tata Surya. *Journal of Natural Science and Integration*, *1*(2), 195–212.

Rahmayanti, P. R., Wati, M., & Mastuang, M. (2016). Pengembangan Modul Suhu dan Kalor Menggunakan Model Pembelajaran Kooperatif Tipe Somatic, Auditory, Visual, and Intellegent untuk Siswa Kelas X SMA Negeri 7 Banjarmasin. *Berkala Ilmiah Pendidikan Fisika*, *4*(3), 192.

Ratumanan, G. T., & Laurens. 2011. *Evaluasi Hasil Belajar pada Tingkat Satuan Pendidikan.* Surabaya: Unesa University Press.

Rosidah, T., Hidayah, F. F., & Astuti, A. P. (2018). Efektivitas Model Pembelajaran Problem Based Instruction Berpendekatan Etnosains untuk Meningkatkan Prestasi Belajar Siswa pada Materi Stoikiometri. *Seminar Nasional Edusaintek*, 419–427.

Rusman. 2012. *Belajar dan Pembelajaran berbasis Komputer (Mengembangkan Profesionalisme Abad 21).* Bandung: Alfabeta.

Saputera, A. R. A., & Tendean, M. (2020). Peranan Kyai dan Santri dalam Mengimplementasikan Nilai Pendidikan Agama di Tengah Lajunya Arus Globalisasi dan Fenomena Akulturasi Budaya Indonesia. *Jurnal Pemikiran, Pendidikan, Dan Penelitian Ke-Islaman*, *6*(1).