

## **Development E-Multimedia Interactive Use Integrated Nearpod Application Of Somatic, Auditory, Visual, Intellectual On Exponent And Logarithm Material**

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### **Abstract**

*This research aims to develop, describe validity, practicality, and effectiveness. This research uses the ADDIE model that consists of analysis, planning, development, implementation, and evaluation stages. The subject of the study was a student of X class at MAN Lhokseumawe City of 26 people. Learning media validity refers to the results of media evaluations by media experts and material experts, as well as small-group student trials. The validity is seen in the product evaluation results by the media expert at 95,01% with the category "very valid", the percentage evaluation result by material experts at 96.98% with the categories "highly valid", and the product assessment result by nine small group students at 93.88% in the category 'very valid'. The effectiveness of the application of the product was assessed from the elevation response of the pupil with elevation result of the student response was obtained with a percentage of 93.8% with the criterion "very practical". There were 22 of the 4 students who were not. Products produced effectively in matters of understanding the mathematical concepts of students of class X MAN City Lhokseumawe, proved a percentage value of 84.61% with the criterion "very effective". Based on the results of research and development, it can be said that the nearpod-based mathematical learning media product developed for Exponent and Logarithm materials is highly efficient and highly effective in the learning process of SMA/MA mathematics.*

**Keywords:** *Nearpod, Learning Media, SAVI Model*

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## **INTRODUCTION**

Mathematics is a subject that is taught at all levels of education, from elementary school to university. level college tall, Because mathematics contain various draft logical And realistic that can to form thinking public And play a role important in learning (Wahidmurni, 2020). Because That in process learning participant educate need mathematics For meet real-world needs and solve problems. Mathematics is also a subject taught in schools that contributes to achieving national education goals and building a productive, innovative, and broad-minded Indonesian nation (Widayati, 2022).

Education requires something called learning, where it has become a basic need of Indonesian society that must be met in accordance with the demands of progress which are also the demands of the country's civilization and technological progress. The development of technology and information has a positive impact in the field of mathematics. The Basic and Secondary Education Process Standards state that learning will be more efficient and effective if information and communication technology can be utilized in the learning process (Permendikbud, 2016).

To achieve maximum learning goals, teachers must be able to produce learning quality, creative, and interactive so that their duties androle can be carried out properly. The task and role of teachers in teaching is to act as facilitators. (Dwiqi et al, 2020) explained that the problems faced in schools today in the use of media are the unavailability of interactive learning media in schools, and there are still many teachers who are not able to create interactive learning media. This is in line with Abdullah (2016) who stated "that creativity Teacher a eye lesson in utilise instructional Media Not yet so maximum. Teacher only use media in the form of book, board write and display media. However, in designing or designing their own media related to the

subject matter, teachers have not been able to do it. Therefore, Teacher only utilizing media Which There is in school whereas to develop it, teachers are not yet optimal".

The Industrial Revolution 4.0 era is an era full of competition. Therefore, every countries need to have quality human resources to be able to compete with other countries. Source Power man Which quality can be obtained through training Which quality. The Indonesian government has developed a curriculum to help students face the challenges of the times. Which Keep going changed, For still competitive in era revolution industry 4.0. Learning It is hoped that it will be interesting and not boring and engage students and provide meaningful experiences for participant educate (Damara et al, 2021). By Because That, media learning interactive can be used for learning because it can involve students and provide meaningful experiences.

Based on results observation And interview with Teacher tutor Which done on October 2023 to December 2023 at MAN Kota Lhokseumawe, during the KMM (Independent Teaching Campus) activity, information was obtained that learning carried out in the classroom had not utilized much learning media. Especially on web based media or technology in in process learning, Because participant educate only know that use of technology only For Network social just. On moment learning daily, participant educate more get a lot of information from the teacher, Students are also not actively involved in searching for information. Learning Which implemented One direction make participant educate bored even fast forgetting learning and less interested in learning mathematics, with the use of digital learning media is still less than optimal and often not diverse. In fact, students are more interested when there is new media to carry out learning.

Based on the above problems, interactive learning media is needed to overcome problems in the learning process. As an effort to develop learning media to overcome problems in the learning process, one way is to use information and communication technology, such as web -based technology. or media learning based on digital in the form of interactive multimedia.

Interactive multimedia is a combination of several other media elements, such as text, images, graphics, animation, audio and video, as well as interactive delivery methods that can create learning experiences for students that are similar to real life around them (Ramdhani, 2018). One of the applications or websites that are implemented to help the learning process in the classroom is Nearpod -based learning . This is in line with the opinion of (Nurhamidah, 2021), " Nearpod is room learn that interactive and very relevant with learning digital-based which explains that Nearpod is a web -based learning application that facilitates interactivity during learning". Nearpod has various learning support functions that can used, Teacher can choose function content or activity Which in accordance with material And learning objectives .

According to (Rindiantika, 2018), he realized that the function of learning media is 1) to increase engagement participant educate, 2) stimulate brain in think in a way concrete, And 3) easy understand the concept. Flavor want to know as well as attention participant educate can arise in self participant educate Because there is a feeling interested on self participant educate, use media education Which packed in various Specific forms can train thinking and avoid misinterpretation. For example, in learning mathematics Exponent And Logarithm. There is fact existence difficulty participant educate in working on exponents and logarithms.

The existence of errors obtained by students in solving problems in the form of powers, roots, and logarithms consists of conceptual errors and many students do not solve the problem. logarithms consisted of conceptual errors and many students did not complete their work because they could not understand the steps of using the properties of logarithms. Because he could not understand the steps of using the properties of logarithms. This is because the operations on logarithms are different from the operations on real numbers and integers at the time of junior high school and here the researcher wants that with the Nearpod application students can understand about exponents and logarithms.

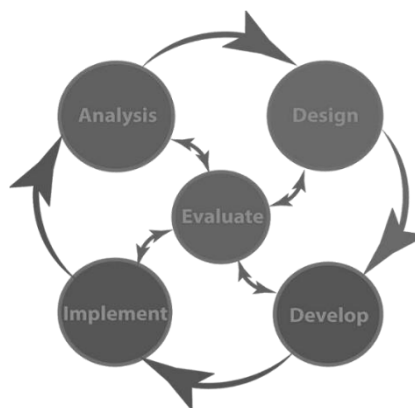
Learning models play a very important role in creating effective learning. According to (Wati et al, 2019) there are many learning models that influence the effectiveness of the learning process, thus enabling students to think critically. with model learning *Somatic, Auditory, Visual, Intellectual*. According to Primadani, dewi (2023:109) The SAVI ( Somatic, Auditory, Visual, Intellectual ) learning model is a learning model that emphasizes that learning must use all the senses.

According to (Pazah et al, 2024), based on the results of the product validity test, it shows that the interactive learning media assisted by Nearpod meets the highest criteria of 88.72%. From the results of the response test analysis, students' answers to the questionnaire concluded that the interactive learning media assisted by Nearpod meets the criteria very well with a percentage of 85%. In the field test, the N-gain result was obtained at 0.74 which is included in the high classification. Thus, the development of interactive learning media assisted by Nearpod is very feasible and effective for improving the learning outcomes of high school students in Bengkulu City on the material of parabolic motion and received a very good response.

Based on the background above that has been explained, the researcher will conduct research with the title "Development of Interactive E-Multimedia using the Nearpod Application in Integrated Mathematics Learning Somatic, Auditory, Visual, Intellectual on Exponent and Logarithm materials".

### RESEARCH METHODS

Study this uses method *Research and Development (R&D)* which used to produce product certain. Whereas model development Which used in The development of this media is the ADDIE model which consists of five stages including analysis , design , development , implementation , and evaluation (Sugiyono, 2020:394). Research will implemented at MAN Lhokseumawe City which located in Kp. Jawa Lama, Banda Saktu District, Lhokseumawe City =, Aceh in the even semester of the 2024/2025 academic year. The steps of ADDIE development research in this study are presented in the following diagram.



Instrument This research product, namely *nearpod- based learning media* integrated with *somatic, auditory, visual, intellectual*, was tested to determine validity, practicality, And effectiveness media Which developed. Sheet questionnaire or questionnaire And test instruments that have been created by researchers based on the derivatives of the theory used, then made into a grid instrument. Instrument study given to 1 on 2 media expert, 2 expert material, And respondents. The instruments used in data collection in this development research can be seen in table 1 below.

Table 1 . Instrument questionnaire For expert media

No	Aspect	Indicator
		Order appearance on media

1	Media View	Design picture give impression positive so that capable interesting interest Study
		Election color, <i>background</i> , text, picture And animation interesting
		Picture material can seen with clear
		The selection of font type and size supports the media become more interesting
		Media use Language Indonesia Which Good And Correct
2	Effectiveness	The effectiveness of learning media can accelerate the learning process
		Ability media as tool help For understand and remember information
		Learning media helps make it easier for students to deliver material
3	Efficiency	Media learning help Teacher in convey material
		Convenience operation media
		Push flavor interest participant educate
4	Quality	Clarity Usage instruction Study
		Quality appearance media learning
		Volume voice in media sounds clear
		Quality voice or audio heard very clear
5	Security	Knob Which there is on media learning easy in reach
		Usage Language easy understood
		Security media in use

Source: Modified Badriah (2021)

Table 2 . Instrument questionnaire For expert material

No	Aspect	Indicator
1	Eligibility Contents	Compilation presentation material
		Material Which served in accordance with Which contained in (CP) Learning Outcomes and Learning Objectives (TP).
		Compliance material with media that developed
		Depth material Which delivered
		Clarity material And example question Which delivered.
		Accuracy draft And definition.
		Evaluation Which given in accordance with material And objective learning
2	Systematics	Order material lesson Which delivered in media learning.
3.	Layout Language	Compliance video For to clarify Material ( <i>Auditory</i> )
		Games Which served help student more understand about material
		Language Which used For convey material in accordance with PUEBI (General Guidelines for Indonesian Spelling).
		Compliance term Which used on material.
4	SAVI Stages	Study <i>somatic</i> c means Study with move, student requested counting while stand
		<i>Auditory</i> Study with hear through video learning
		<i>Visual</i> Study with see And observe chart on material
		<i>Intellectual</i> is the part that reflects, creates, solves problems that build meaning.

Source: Modified Badriah (2021)

Table 3 . Instrument questionnaire For learners

No	Aspect	Indicator
	Multimedia	Appearance multimedia
		Compliance Contents material

1	components interactive	Clarity object picture
2	Display organizer	Material Which served can understood with easy
		Design multimedia interactive And color interesting.
		Color on media learning
		Knob or navigation easy used
		Code access Which inputted on application
	Appearance video learning on media learning <i>Nearpod</i>	
3	Presentation material	Example question Which served in accordance with material Which taught
		Media Learning speed up process Study participant educate
		Picture And text Which served interesting
		Language Which served clear And communicative
4	Evaluation overall	Media learning Which developed easy used
		Instruction use multimedia interactive easy understood
		Multimedia interactive can used repetitive time to learn

Source: Modified ( Febrianti et al. 2021)

**Technique Analysis Data**

Table 4. Mark Scoring

No	Score	Information
1.	4	Very agree
2.	3	Agree
3.	2	No agree
4.	1	Very No agree

Source: Sugiyono (2020: 174)

Count mark average can done with use formula following ( Arikunto, 2017 : 301 ) :

$$\bar{x} = \sum \frac{x}{n}$$

With information :

$\bar{X}$  = Score average

$\sum X$  = Amount score

N = Amount score max

Table 5. Criteria Validation Expert

Score Quality	Qualification
81- 100%	Very Valid
61- 80%	Valid
41- 60%	Not enough Valid
21- 40%	No Valid
0- 20%	Very No Valid

Source: Baharudin and Cholik (2021:135)

## RESULT AND DISCUSSION

Based on the development results, it is known that the product was successfully developed in this research and development (R&D), namely the *nearpod- based learning media product* in mathematics lessons. The results of the validation of media experts and material experts by the validator aim to find out validity. Result data product availability obtained by researchers on *development* stage of data from the results of filling out the validation questionnaire by media experts and material experts. Assessment from second expert media obtained from indicator own mark average 95.01% with the statement "very valid". The assessment from the two material experts was obtained from the indicator having a value average 96.98% with information "very valid". On moment has stated worthy by validator media And material, researcher revise from suggestion And comment Which given by media and material experts. After the revision was completed, the researcher brought back the revised results that had been worked on to the media and material experts, then it could be used in the next stage. After that, testing a small group where this was still in the (development) stage at Man Kota Lhokseumawe on May 8, 2024 in class X-4 with a total of 9 students selected by the teacher.

During the small group trial each student installs or opens from google chrome media learning based on nearpod Which Already validated and each student was given a response questionnaire. The questionnaire assessment had an average value of 93.88% with the description "very valid".

The next stage is the implementation stage, nearpod- based mathematics learning media. During the group trial big conducted by teachers teaching using nearpod-based learning media, students have downloaded or opened the application from the web. Researcher teaches using the SAVI model, in nearpod- based learning media there is a SAVI model. After the large group trial is complete done, each student given questionnaire response participant educate For see nearpod -based learning media. The average value of the large group of student response questionnaires on the assessment indicator was 93.8% with a practicality level of "very practical". After students filled out the student response questionnaire, the researcher distributed a test instrument in the form of essay questions totaling 6 questions on Students' Mathematical Concept Understanding. The results of the test instrument were 84.61% with the criteria of "very effective".

Based on the evaluation stage, it can be seen that each assessment point for the Nearpod mathematics learning media in the Somatic, Auditory, Visual, Intellectual models on the material Exponent And Logarithm very valid, practical, And effective For used on mathematics learning process.

### Results Evaluation Validation Media And Material

Table 6. Results Validation To Aspect Evaluation Validators Expert Media

No.	Aspect	$\sum Skor$	$\sum Skor Max$	centage (%)	Information
1	Appearance Media	47	48	97.92	Very Valid
2	Effectiveness	30	32	93.76	Very Valid
3	Efficiency	20	24	83.4	Very Valid
4	Quality	40	40	100	Very Valid
5	Security	8	8	100	Very Valid

Amount Total	145	152	475.08	Very Valid
Average (%)	29	30.4	95.01	

Picture 2. Graphics Media Expert

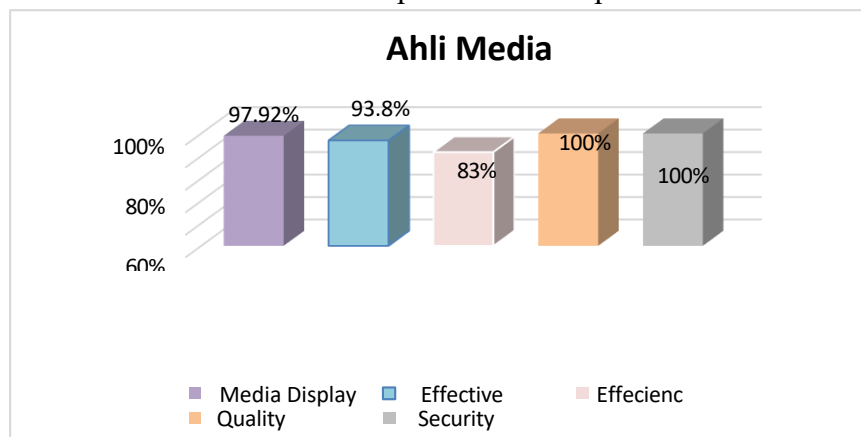


Table 7. Results Validation To Aspect Evaluation Validators Expert Material

No.	Aspect	$\Sigma Skor$	$\Sigma Skor Max$	centage (%)	Information
1	Eligibility Contents	51	56	91.07	Very Valid
2	Systematics	24	24	100	Very Valid
3	Layout Language	16	16	100	Very Valid
4	SAVI Stages	31	32	96.88	Very Valid
Amount Total		122	128	387.95	Very Valid
Average		30.5	32	96.98	

**Test Small Group**

Table 8. Results Test Try Group Small

Student Code	Total Score	Maximum Score	Score Average	Overall Average	Information
S1	64	68	94.12%	93.88%	Very Valid
S2	67	68	98.53%		
S3	68	68	100%		
S4	64	68	94.12%		
S5	64	68	94.12%		
S6	61	68	89.7%		
S7	61	68	89.7%		
S8	61	68	89.7%		
S9	61	68	89.7%		

**Results Test Try Group Big**

Data results testing product towards students in group big can seen on The following table:

Table 9. Test try media through participant response educate

No	Assessment Aspects	Number of Students	$\sum Skor$	$\sum Skor Max$	Presentation (%)	Category
1	Interactive multimedia components	26	292	312	93.59	Very Practical
2	Display organizer	26	587	624	94.07	Very Practical
3	Presentation of material	26	489	520	94.03	Very Practical
4	Evaluation overall	26	292	312	93.58	Very Practical
Average			415	316	93.8	Very Practical

$$KK = \frac{\text{Amount Student}}{\text{Completed Total Number of Students}} \times 100\%$$

$$KK = \frac{22}{26} \times 100\%$$

$$KK = 84,61\%$$

There were 22 students who completed and 4 students who did not complete out of 26 students in class X-1 Man City Lhokseumawe. Completeness results test on test try student group big 84.61%, thus results the test has been met criteria achievement completeness Study students have achieved. So its effectiveness can be measured, the assessment of nearpod-based mathematics learning media using the somatic, auditory, visual, intellectual models on the Exponent and Logarithm material presented above, which is 84.61% with the criteria of "very effective".

## CONCLUSION

Based on the results of the development and discussion above, the conclusions are as follows: 1) The purpose of this study is to produce a product in the form of Nearpod learning media about Exponents and Logarithms using the ADDIE model which is limited to the evaluation stage. Based on the results of the study, it can be concluded that students are interested in the Nearpod learning media about Exponents and Logarithms. 2) Based on the assessment expert media with percentage results evaluation 95.01% with criteria "very valid". Expert assessment material with results evaluation 96.98% with criteria "very valid". Evaluation from 9 participants educate with percentage results evaluation 93.88% with criteria "very valid". 3) Based on questionnaire Student responses consisting of 26 students obtained a percentage of assessment results of 93.8% with the criteria "very practical". 4) Based on the results of 26 students through learning completeness, it was found that out of 26 students, only 22 students were declared complete and 4 were not complete, with a percentage score of 84.61%, with the criteria "very effective".

Based on the results of the development and discussions carried out, suggestions can be made for further research, including the following: 1) The researcher hopes that further researchers can use the material others to design and test Nearpod- based learning media and use it as a resource that can be used in the learning process. 2) Researchers expect Teacher can utilise environment Study Which developed in learning process, 3) Development of nearpod-based mathematics learning media is not only developed with the SAVI model, but can be developed with other learning models.

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