Hipotenusa: Journal of Mathematical Society
Volume 7 Issue 2 Year 2025
ISSN: 2716-3156
Website: https://ejournal.uinsalatiga.ac.id/index.php/hipotenusa/index

Augmented Reality Enhanced Inclusive Learning Model (AR-ILM): Supporting Mathematical Literacy Development for Students with Disabilities

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DOI: 10.18326/hipotenusa.v7i2.4069

Article submitted: May 19, 2025
Article reviewed: September 26, 2025
Article published: December 30, 2025

Abstract

Mathematical literacy plays a vital role in daily life, particularly in identifying, reasoning, communicating, problem-solving, and representing mathematical ideas in real contexts. However, for students with intellectual disabilities, developing mathematical literacy remains a significant challenge. To address this issue, innovative scaffolding through interactive and visual media is required. This study aims to develop NEIMoL media assisted by Augmented Reality (AR) that meets the criteria of validity, practicality, and effectiveness in improving mathematical literacy among students with intellectual disabilities. The research employed Plomp's (1997) development model, which includes five stages: initial investigation, design, realization, testing and revision, and implementation. Data were collected through expert validation, observations, interviews, questionnaires, and mathematical literacy tests. Instruments included expert validation sheets, teacher and student response questionnaires, and pre-test and post-test assessments. The validation results showed the media to be "Very Valid" with an average score of 4.1 (on a scale of 5). Practicality was rated positively, with a score of 3.7, and both teachers and students expressed favorable responses. Effectiveness was demonstrated through an N-Gain score of 0.7175, categorized as high improvement. These findings indicate that AR-assisted NEIMoL media is valid, practical, and effective in supporting the mathematical literacy of students with intellectual disabilities.

Keywords: NEIMoL, augmented reality, literacy mathematics, mental retardation

INTRODUCTION

Mathematics is one of eye lessons taught in each level education in Indonesia because own role important in develop knowledge knowledge other (Wulanningtyas & Marhaeni, 2022) . Therefore that, learning mathematics become very important and taught in all level education, starting from school basic, intermediate, up to college high. Not only in school regular, school inclusive also teaches mathematics although his students own limitations, because limitations the no obstruct they forget access full to knowledge knowledge and education.

Every individual own equal rights for to obtain decent and quality education, including for children with needs Special (disabilities). This is in line with Law of the Republic of Indonesia Number 8 of 2016 concerning Persons with Disabilities, which states that sufferer disability own right for get inclusive education as well as equal access throughout level education. However the reality on the field show that the learning process for ABK still face various obstacle (Sahrudin *et al* ., 2023) . One of ABK groups that often experience challenge significant in learning is child mentally disabled. According to Rahmandhani *et al*. (2021) , mentally retarded is disturbance developments experienced individual with level intelligence (IQ) that is well below average, accompanied with limitations in ability intellectual as well as difficulty in do adaptation social. Mentally retarded children own different characteristics from child in need special others. Some common characteristics found in children mentally disabled according to Darmawati *et al*. (2023) such as ability limited learning, difficulties in maintain concentration, level interest low learning, as well as trend easy forget. In physical and health, children mentally disabled generally be under condition normal children, including delay in reach milestone development like walking and talking. Ability hearing and sight they are often not optimal, which also contributes affect the learning and adaptation process they in life daily.

Children with condition mentally disabled generally experience obstacle in understand concepts mathematics of a nature abstract (Choiriyah, 2021) . Difficulties This can caused by a number of factors, including limitations in understand things that are abstract, range short concentration, and the ongoing learning process in a way more slow compared to children in general (Firdaus, 2021) . The condition cause literacy mathematics for children mentally disabled develop more-slow.

Literacy mathematics is ability somebody in reason in a way mathematical as well as formulate, implement, and interpret draft mathematics For solve problem (Danuri, 2023) . In children mentally retarded, literacy mathematics related with development ability cognitive which includes skills read, understand, and apply concepts mathematics in appropriate context (Panglipur, 2023) . In everyday life, literacy mathematics hold role important because support development ability think logical, analytical, and breakdown problem (Ubaidah & Kusmaryono, 2020; Ubaidah, et al., 2024) . However, for student mentally retarded, achievement literacy mathematics often become challenge alone consequence limitations in understand draft abstract. Mathematical literacy is widely recognized as a core competency for the 21st century (OECD, 2022). It equips individuals to interpret, employ, and communicate mathematical reasoning in real-life contexts.

However, students with intellectual disabilities face persistent barriers in developing mathematical literacy due to cognitive limitations, reduced working memory, and difficulties in abstract reasoning (van Herwegen et al., 2017).

Inclusive education, as mandated by the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) and Indonesia's Law No. 8 of 2016, emphasizes equal access to quality education for all learners. Despite this, conventional pedagogical methods often fail to accommodate diverse learning needs. This creates an urgent need for adaptive instructional models that combine pedagogical innovation with assistive technologies.

The Learning Environment and Project-Based Learning (LE-Probale) model offers a learner-centered framework that fosters collaboration, contextual problem-solving, and active engagement. Meanwhile, Augmented Reality (AR) has proven effective in making abstract mathematical concepts more concrete and accessible for students with disabilities (Barro et al., 2022). This study explores the integration of AR-assisted NEIMoL within the LE-Probale model to improve mathematical literacy outcomes in inclusive classrooms.

For overcome problem mentioned, it is necessary innovation in development of learning media that is capable serve draft mathematics visually, concretely, and interactively, so can help student mentally disabled in understand material with more-good. In general , learning media in education own role important in facilitate interaction between teachers and students (Aditya *et al* ., 2021) . Use of appropriate media can help streamline the learning process, making it more effective and efficient. With supporting media, delivery material can more-easy understood, so that increase involvement and understanding students. The use of appropriate media No only effective used moment learning , but also capable grow interest learn and help student understand material in a way more deep (Ramadhani *et al* ., 2023) . With Thus, the development of appropriate learning media with characteristics and needs student mentally disabled become step important for increase literacy mathematics they optimally.

Along with rapid development technology, various innovation in field education keep going popping up For support the learning process (Ubaidah, at al., 2024) . One of innovation technology that has potential big for developed is *Augmented Reality* (AR). AR can change method presentation material with integrate digital objects that support visualization concepts abstract , so that make it more concrete and easy understood by students (Putra et al., 2024) . This technology capable present experienc learn more real and interactive through presentation virtual objects in the real world. On the other hand, learning media *NEIMoL* is a designed visual media for give experience nteresting and enjoyable learning, especially for student with need special. This media shaped the box inside arranged a series Photo or image, where each Photo functioning For explain draft or material certain in a way gradually so that make it easier understanding student (Mu'alamah *et al* ., 2024) .

Merger between *NEIMoL* media with AR technology is believed can create environment learn more effective and innovative for student mentally retarded. This media allow presentation concepts mathematics in concrete and interactive visual form,

so more-easy understood by students with limitations intellectual. Delivery abstract material become more real through help three visual objects dimensions that can be accessed through application AR based.

Research purposes This is for developing *NEIMoL* media AR assisted that meets valid criteria, practice, and effective in support literacy mathematics for student mentally retarded. Through inclusive, interactive and enjoyable media, it is hoped that the learning process No only become more interesting, but also capable increase understanding draft in a way significant. With Thus, the use of *NEIMoL* assisted AR technology can become solution alternative in support achievement literacy mathematics for children mentally disabled.

METHODS

Study This is type study development (Research and Development) which aims for develop learning media NEIMoL assisted by Augmented Reality to improve literacy mathematics student mentally retarded. The development model used in study This refers to the Plomp model which consists of of five stages main, namely: investigation initial, design, realization, testing and revision, and Implementation.

Investigation initial is a stage analysis that aiming for identify problem in the learning process mathematics students, especially student mentally retarded, and need of appropriate learning media. Data is collected through interviews and observations direct towards teachers at school disability. At the stage design, done design the beginning of the learning media that will be developed. Product design arranged based on results analysis needs, as well as customized with characteristics student mentally retarded. In addition, at the stage this is also compiled instrument study in the form of sheet validation, questionnaire response, and question test. At the stage development of learning media NEIMoL developed and tested its validity by expert materials and media experts. Validation is carried out for evaluate eligibility content, appearance, and functionality of the media. (4-5) testing and revision, as well as implementation. At the stage implementation, this product that have been validated then implemented on the subject research, namely student disability with characteristics mentally retarded in school disability. Researcher carry out learning using developed media, accompanied by with filling questionnaire practicality by teachers and students.

Data collection techniques used in this study is questionnaire and test. Questionnaire consists of from sheet validation expert materials and media, questionnaires teacher and student responses, while test consists of from pretest and posttest questions for students at the stage implementation. Validation sheet used for evaluate appropriateness of learning media, meanwhile questionnaire response teachers and students for measure practicality of the media. The results of the pretest and posttest were used for evaluate whether LE-Probale model through NEIMoL can increase literacy mathematics student.

Data analysis in study This covers three aspect main, namely validity, practicality, and effectiveness of the media.

Validity Test

Validity test aiming for measure feasibility of learning media based on evaluation expert material and media experts. Evaluation done based on Likert scale with five categories assessment, namely very good, good, sufficient, lacking, and very lacking. The score for each item evaluation Then changed to inform percentage for determine level media validity. Formula calculations used for adapted validity testing from (Ramadhan et al., 2024) is as following:

$$V = \frac{\sum x_i}{\sum x} \times 100\%$$

Information:
V = Validity (%)
$\sum x_i$ = Total number of respondents' answer scores
$\sum x$ = Total maximum score

As for the classification level validity used referring to Bannang et al. (2023), which presented in Table 1.

Table 1. Validity Criteria

Presentation Achievement	Validity Criteria
$80\% \leq P \leq 100\%$	Very Valid
$60\% \leq P < 80\%$	Valid
$40\% \leq P < 60\%$	Quite Valid
$20\% \leq P \leq 40\%$	Less Valid
$0\% \leq P \leq 20\%$	Invalid

Practicality Test

The practicality of the media is measured through questionnaire Teacher and student responses. Questionnaire teacher response using Likert scale, whereas questionnaire student analyzed use Guttman scale (answer) yes / no). The formula used is for count level practicality product development of this media is as following (Nurhusain & Hadi, 2021):

$$P = \frac{f}{N} \times 100\%$$

Information:
P = Percentage of each statement item
F = Total assessment score obtained
N= Maximum score

Percentage results response calculated and classified to in category practicality as listed in Table 2, based on guidelines from Ramadhani & Izzati (2023).

Table 2. Practicality Criteria

Presentation Achievement	Practicality Criteria
$80\% \leq P \leq 100\%$	Very Practical
$60\% \leq P < 80\%$	Practical
$40\% \leq P < 60\%$	Enough Practical
$20\% \leq P \leq 40\%$	Less practical
$0\% \leq P \leq 20\%$	Not Practical

Effectiveness Test

Media effectiveness is analyzed through pretest and posttest results students. Before the effectiveness test is carried out, the data must first be formerly tested its normality. The purpose of the data normality test is for ensure that sample data used originate from population that has normal distribution. Normality test done using the Shapiro-Wilk test (Sintia et al., 2022). If the data is normally distributed, then to be continued with paired sample t- test for-know influence significant media on improvement literacy mathematics students. The hypothesis used in this test is as following:

H0: $\mu 1 - \mu 2 = 0$, which indicates that the average ability literacy mathematics student before and after taught with learning media NEIMoL is the same.

H1: $\mu 1 - \mu 2 \neq 0$, which means that the average ability literacy mathematics student before and after using learning media NEIMoL the is different.

In addition, the analysis improvement results learning also counts using the Normalized Gain (N-Gain) test. Classification criteria N-Gain score based on Volunteers et al. (2024) is as following:

Table 3. N-Gain Score Criteria

Normalized Gain Value	Criteria
$g \leq 0.70$	Tall
$0.30 \leq g < 0.70$	Currently
$g < 0.30$	Low

RESULTS & DISCUSSION

NEIMoL media development assisted by Augmented Reality For increase literacy mathematics student mentally disabled done use Plomp. Development process This refers to the Plomp model, which consists of of five stages with details as following:

Investigation initial

At the stage this, researcher do observation through interview with the teacher, as well as observation directly in the environment school. Observation results show that part big student Still experience difficulty in understand concepts mathematics. The learning process that is taking place is still ongoing dominated by the method conventional with a holistic approach monotonous, so that not enough interesting and not capable facilitate need Study student optimally, especially for student mentally retarded. This condition indicates the need innovation in capable learning media serve material visually, concretely, and interactively. Based on findings said, researchers innovate for develop learning media NEIMoL assisted technology Augmented Reality (AR) as alternative expected learning can increase literacy mathematics student mentally retarded in school disability.

Design

Focus main at stage design is designing learning media that can become solution effective to problems that have been identified at the stage previously. At the stage this, researcher start compile instrument research consisting of on sheet validation expert

materials and media experts for evaluate level validity of the developed media, questionnaire teacher and student responses for evaluate level practicality, as well as question pretest and posttest were used for measure effectiveness use of media in increase literacy mathematics students. Pretest and posttest questions were prepared researcher focused for measure improvement literacy mathematics students, with refers to the indicator namely identifying, reasoning, communicating in mathematics, strategy in problem solving of mathematics as well as represent in everyday-life. Here indicator literacy mathematics used in study this, which is adapted from OECD (2022); Qadry et al. (2022); Ubaidah, et al., (2025):

Table 4. Indicators Literacy Mathematics Adaptation from OECD (2022) and Qadry et al. (2022)

No	Indicator Literacy Mathematics	Sub Indicators
1.	Identifying	Student capable identify aspect mathematics from the problem lies in context life real and identify significant variables
2.	Reasoning	Student capable recognize structure mathematics (including regularity, relationships, and patterns) in problem or situation
3.	Communicating and strategize in problem solving of mathematics	For look for the solution, students can use a number of kinds of strategies, good in a way direct and also no direct.
4.		Student capable make generalization based on results implementation procedure mathematicsfFor find solution
5.	Representing in life daily	Student capable interpret results mathematics return to real world context

In addition to the compilation instruments, researchers also conducted election materials and resources to be used in making product. Selection material done in a way careful with consider aspect resilience, security, and conformity its use for student mentally retarded. In designing visual design such as titles and images in the media, researchers use device Canva software as tool help design. While that, for develop feature based on technology Augmented Reality, researcher choose use NEIMoL Because its convenience in adapt with need learning interactive. Furthermore, researchers start carry out the design process product in a way physique with gather ingredients like box NEIMoL measuring 7×7×4 cm, small neodymium magnet, paper photo, sticker for AR titles and markers, as well as tool supporter like glue shoot and cut. After all materials and tools collected, researchers carry out the assembly process until produce a learning media prototype NEIMoL assisted technology Augmented Reality ready tested validity, practicality, and effectiveness.

Figure 1. Tools and Materials Used

Realization

At realization stage where the validation process is carried out to NEIMoL media assisted by Augmented Reality by two validators, namely media experts and expert material. Validate this aiming for evaluate level media eligibility before implemented in the learning process. Validation by media experts is used for evaluate eligibility media display and function, while validation by expert material aiming evaluate conformity Contents material with objective study as well as level ability student. Media is declared valid if to obtain percentage mark validation in range. This matter in line with research conducted by Mirnawati et al. (2023) which states that state that the media is considered valid if own percentage between evaluation done use instrument based on Likert scale. If there is input or suggestions from the validator, then the media must revise moreover first to fit with standard expected feasibility. After the revision process finished and media meets valid criteria, product ready for implemented in trial learning.

Figure 2. NEIMoL display AR assisted

Implementation

At the stage this, NEIMoL media assisted by Augmented Reality implemented in a way direct in the learning process to subject research, namely student disability with Down syndrome characteristics in school disability in the year lessons 2024/2025. Implementation implementation done for know how the media is developed can used in a way real in activity learning as well as for measure the practicality and effectiveness of the media. Implementation stage implementation in study this covers a number of steps, namely:

Pretest Test

Implementation of the pretest aims for measure ability beginning literacy mathematics student before using media. Pretest questions are prepared for measure improvement literacy mathematics students, with refers to the indicator literacy mathematics that is identifying, reasoning, communicating in mathematics, strategy in problem solving, and represent in everyday life. Questions this is also customized with ability think student mentally disabled light to be more-easy understood and done.

Activities LE- Probale Model Use NEIMoL AR assisted

Problem model learning using NEIMoL media assisted by Augmented Reality This designed in a way interactive for students can more understand draft mathematics taught and through all existing syntax (Ubaidah, et al., 2025).

Figure 3. Learning activities of the LE- Problem model Use NEIMoL AR assisted

Posttest Test

Posttest aims to find out improvement ability literacy mathematics after media use. Prepared posttest questions researcher focused for measure improvement literacy mathematics students, with refers to the indicator identifying, reasoning, communicating in mathematics, strategy in problem solving, and represent in everyday life. Questions It is also designed to fit with ability think student mentally disabled light, so that more-easy understood and resolved.

Filling Questionnaire Response Students and Teachers

At the end learning, done filling questionnaire by teachers and students for-know response they to the media used, which then analyzed for evaluate level practicality from the learning media developed. Evaluate stage is stages end in the development model functional Plomp For evaluate the whole process and results from the developed learning media. Formative evaluation aiming for evaluate level validity and practicality of the media. Assessment validity carried out by media experts and expert material through sheet validation at stage development. Validation results from second expert show that the media has fulfil very valid criteria, so that worthy for applied in the learning process. Furthermore, the practicality of the media is assessed through questionnaire teacher and student responses given after learning taking place. The teacher's response shows that the media is very practical used in learning, and all student give response positive to experience Study using this media.

Temporary that, evaluation summative done for evaluate media effectiveness in increase literacy mathematics students. This evaluation done through administering pretests and posttests that are structured based on indicator literacy mathematics, namely identifying, reasoning, communicate mathematics, strategy in breakdown problems, and

represent in life daily. Test results analyzed using the paired sample t-test and the N-Gain test. The following results analysis of data that has been done:

Data Analysis Results

Product Validation Test

Media Expert Validation Test Results

Media expert validation aims dor get input, information, and evaluation related to NEIMoL media assisted by Augmented Reality. Validation process This involving three validators. Result data validation by media experts of the media developed presented in the table 5.

Table 5. Results of Media Expert Validation Questionnaire

No	Indicator	Number of Items	Average Score
1.	Writing letters and numbers on the media	2	4.3
2.	Cover design title	3	4.0
3.	Media design	4	4.4
4.	Design on the part under media	2	4.3
5.	Materials used	2	4.3
6.	Use technology	1	4.3
7.	Develop knowledge about mathematics	2	4.2
	Total Score Obtained	16	29.9
	Percentage Score		85.5%
	Category		"Very Valid"

Table 5 shows that the average score validation three validators reached 29.9 out of score maximum 35, with percentage validity by 85.5%. Based on criteria validity, NEIMoL media assisted by Augmented Reality including in "Very Valid" category. Findings This in line with results study the untamed (2021) about development of domino card media in learning mathematics, which shows percentage validation media experts by 83.3% and including in "very valid" category.

Material Expert Validation Test

Validation by expert material aiming ensure material and content NEIMoL assisted by Augmented Reality in accordance with need learning. Validate this involving three validators, namely two lecturer education Mathematics, Unissula and one school teacher disability. Validation results expert material can see in Table 6.

Table 6. Results of the Material Expert Validation Questionnaire

No	Indicator	Number of Items	Average Score
1.	Conformity materials used	4	4.2
2.	Accuracy material	3	4.2
3.	Develop knowledge about mathematics	3	4.1
4.	Attraction packaged material	3	4.2
5.	Connection materials and learning	2	4.3
6.	Use technology	2	4.3
	Total Score Obtained	16	25.4
	Percentage Score		84.6%
	Category		"Very Valid"

In table 6. shows that the NEIMoL media assisted by Augmented Reality to obtain average score 25.4 of the total score maximum 30, which results in percentage validity 84.6%. Based on criteria validity, percentage This enter in “Very Valid” category. This result in line with study Nilasari et al. (2023) who obtained percentage validation in range $80\% < x \leq 100\%$ and categorized as "Very Valid".

Practicality Test Results

Teacher Response Questionnaire Results

Questionnaire Teacher responses are filled in by the class teacher used as research. Result evaluation questionnaire Teachers' responses to NEIMoL media assisted by Augmented Reality is shown in Table 7.

Tabel 7. Teacher Response Questionnaire Results

No	Indicator	Average Score	Percentage
1.	Benefits of media in learning	4.3	86.7%
2.	Media design	4.5	90.0%
3.	Use of media for student	4.3	86.7%
4.	Election material	4.3	86.7%
5.	Use of media for teachers	4.2	84.0%
6.	Materials used	5	100%
	Total	26.7	89.0%
	Category		“Very Practical”

Table 7 shows results questionnaire Teachers' responses to NEIMoL media assisted by Augmented Reality. Six aspects are assessed to obtain percentage of each in range, with a total percentage reaching 89.0%. Based on these results, the media is categorized as 'very practical'.

One of aspect assessment used is benefits of media in learning, with percentage amounting to 86.7% which includes in "very practical " category. This means that the media developed capable create atmosphere learning that is fun, and encouraging involvement active, and help increase understanding material. Findings This in line with study Sundari (2024) stated that that good learning media is a media that can create a learning process more interesting and interactive.

Response Questionnaire Results Student

Questionnaire This filled by 10 students in School disability with down syndrom category after learning using media. Response results student to NEIMoL media assisted by Augmented Reality can seen in Table 8.

Table 8. Questionnaire Response Results Student

No	Indicator	Average Score	Percentage
1.	Feeling after using media	1	100%
2.	Media design	1	100%
3.	Convenience media usage	1	100%
4.	Materials used for media	1	100%
5.	Material presented in the media	1	100%
6.	Use of media in learning	1	100%
	Total	6	100%
	Category		“Very Practical”

Table 8 shows results questionnaire response student towards the media developed. Six aspects were assessed in questionnaire This to obtain percentage in range Overall, the total percentage of the six aspects reached 100%, which shows that the NEIMoL media assisted by Augmented Reality including in "Very Practical " category. This result in line with study Nabila et al. (2021) about development of learning media Pop Up Book, which received mark practicality by 83% and is categorized as "Very Practical ".

Effectiveness Test Results

Normality Test Results

Table 9. Data Normality Test Results

	Kolmogorov-Smirnov [a]			Shapiro Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Pretest	0.139	10	.200 *	0.969	10	0.883
Posttest	0.175	10	.200 *	0.897	10	0.128

Data normality test displayed in the Shapiro-Wilk column show that mark significance for the pretest data is 0.883, while for the posttest data is 0.128. Because both mark significance the more-big of 0.05, then H0 is accepted. This is show that the pretest and posttest data in study This normally distributed according to with criteria taking normality test decision.

Paired Sample T-Test Results

Table 10. Paired Simple Statistics Test Results

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	66.50	10	15,284	4,833
	Posttest	87.50	10	12,528	3,962

Table 11. Paired Samples Correlations Test Results

		N	Correlation	Sig.
Pair 1	Pretest & Posttest	10	0.936	0,000

Table 12. Paired Samples Test Results

		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Pretest-Posttest	-21,00	5,676	1,795	-25,061	-16,939	-11,699	9	0,000

Based on paired sample statistics test results, average student pretest scores was 66.50, while the posttest average increased to 87.50. Analysis table paired samples correlations show coefficient correlation 0.936 with significance 0.000, indicating

existence connection between pretest and posttest scores. In the table paired samples test, value significance (Sig. 2-tailed) of 0.000 < 0.05, so H_0 is rejected. With Thus, there are difference significant between pretest and posttest, and use of NEIMoL media assisted by Augmented Reality proven increase literacy mathematics student

N-Gain Test Results

N-Gain test was performed for measure improvement literacy mathematics student after learning using NEIMoL media assisted by Augmented Reality.

Table 13. N-Gain Test Results

	N	Minimum	Maximum	Mean	Std. Deviation
Gain_score	10	0.33	1.00	0.7175	0.23520
Gain_percent	10	33.33	100.00	71.75460	23.52029
Valid N (listwise)	10				

Based on the results of the N-Gain test in Table 13, obtained the mean value is 0.7175 which is in category improvement tall in accordance with standard normalized N-Gain criterion. This result in line with findings Aryani et al. (2023) who developed e-story book media and obtained N-Gain value is 0.72 in the interval g > 0.7, which is included in category effectiveness high. So that can conclude that learning using NEIMoL media assisted by Augmented Reality effective in increase literacy mathematics student with “High” category.

CONCLUSION

Based on results NEIMoL media research and development assisted by Augmented Reality, in the LE-Probale model can concluded that This media is valid, practical and effective for increase literacy mathematics student mentally retarded. Validation by media experts and expert material show that the media meets "Very Valid" category with percentage validity of 85.5% and 84.6% respectively. Practicality test through questionnaire teacher and student responses also show "Very Practical " results, with percentage of 89.0% of teachers and 100% of students. In addition, the effectiveness of the media is proven through paired sample t-test and N-Gain test. The average posttest score of students increase in a way significant compared to pretest, with the N-Gain test result is 0.7175 which is included in category improvement high. With Thus, NEIMoL media assisted by Augmented Reality declared valid, practical and effective for used in support literacy mathematics student mentally retarded in school disability.

Study This No only prove that the media developed effective, but also becomes innovation new in development of learning media based on Augmented Reality For student in need specifically for study Furthermore, it is suggested that media development be expanded to include material mathematics others. In addition, the features Augmented Reality can improve with add element interactive like voice or animation. The application of this media at the level education regular and also school outside also commonly recommended for expand coverage usage and testing its effectiveness in various learning.

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