AR-B (AUGMENTED REALITY AND BRAILLE) MODULE INNOVATION OF LEARNING MEDIA IN THE FULFILLMENT OF HUMAN RIGHTS FIELD OF EDUCATION FOR VISUALLY IMPAIRED PERSON

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ABSTRACT

In Indonesia alone there are 3 million more people with visual impairments and there are only 10% of media available, and during the covid19 pandemic 99% of students actively use social media during the pandemic especially social media Tiktok which is about 78% of students using Tiktok longer. Even Tiktok's social media users are increasing by around 14.3 million per month. Seeing these problems, the researchers made a new innovation, namely the Ar-B (Augmented Reality and Braille) Tiktok-based Learning Media Innovation which is used for normal and visually impaired students in an effort to fulfill human rights in the field of education for the community. with disabilities. This research uses the R&D type with the Borg and Gall development model. Data collection techniques were carried out through observation, questionnaires, literature studies, documentation and trials and then analyzed using media expert validation analysis techniques, material expert validation analysis techniques and trial analysis techniques. The specific purpose of making this media is to find out whether the Ar-B Module is valid to use and how the student learning outcomes after using this module. The results of this study indicate that the module Ar-B has a validity level of 92% and can improve student learning outcomes.

Keywords: Ar-B Module; learning media; human rights; visually impaired person.

INTRODUCTION

The quality of education within a nation determines its advancement since the number and quality of that nation's official, non-formal, and informal educational institutions are indicators of that nation's future fortune. Since education allows people to develop their potential in line with societal ideals, it is a crucial component of every person's life. Through education, people may cultivate their individuality. This results in a process that is in keeping with education's primary objective, which is to develop students' talents, knowledge, skills, and attitudes to their fullest potential.[1]

One of the ideals of the nation contained in the opening of the Constitution of the Republic of Indonesia is to educate the nation's life, through education. The word education itself comes from the Greek word "paedagogie" which means a direction given to children. This term, then translated into English "education" which means direction or guidance. Whereas in Arabic the word education is known as al-ta'lim, al-tarbiyah and al-ta'dib, al-ta'lim which means the delivery of knowledge and skills, while al-tarbiyah means nurturing or educating, and al-ta 'dib means a process in educating that starts from perfecting the morals of students.[2]

In Law no. 20 of 2003 article 3 concerning the National Education System affirms that "National

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1 Yunia Nur Anggraeni, "Pengaruh Supervisi Kepala Sekolah Terhadap Kompetensi Pedagogik Guru di SMP Negeri 26 Semarang", (*Skrips*i: Universitas Negeri Semarang) 1-2.

2 Nurkholis, "Pendidikan Dalam Upaya Untuk Memajukan Teknologi", *Jurnal Kependidikan* 1, No. 1. (2014: 1-2).

education functions to develop capabilities and form a dignified nation's civilization in order to educate the nation's life. National education aims to develop the potential of students to become human beings who believe and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent and become democratic and responsible citizens.[3]

Through learning activities in the classroom, teachers become human resources who are at the forefront of dealing directly with students. In Government Regulation Number 74 of 2008 concerning teachers in article 1 explains that teachers are professionals with the main task of educating, teaching, guiding, training, assessing and evaluating students in early childhood education through formal education, basic education and secondary education.[4]

A teacher has a crucial role in efforts to form quality human resources. A teacher is also a key factor in the success of a process in education because the teacher becomes an example and role model to be imitated and becomes a source of learning because without a teacher the goals of education itself will not be achieved. The development of science and technology in this day and age makes the task of teachers in creating quality human resources become increasingly difficult[5].

As the main component in teacher education, teachers are required to be able to keep pace with the development of science and technology that continues to grow. In realizing this, of course, a teacher who has high qualifications, competence and dedication is needed in carrying out his professional duties. Any efforts made to advance education will not succeed without the support of a professional teacher.[6]

Religious education is one of three critical areas in the realm of education that must be included in Indonesia's formal education curriculum. Religious education is one of the most significant subjects in Indonesia since it is thought that it would aid in the realization of an integrated existence.[7] What is meant by Islamic religious education is anything done purposefully to guide and offer motivation or teachings to humans so that they might become caliphs on this world with the finest leadership.[8]

Islamic education also has goals that are in accordance with the philosophy and view of life outlined by the Qur'an. In Sholeh's research, An-Nahlawi argues that the purpose of Islamic education is to improve the ability of reason and grow the mind, cultivate the potential for talent that is innate, and develop the potential of the younger generation. In realizing these educational goals, there is a main agent who plays an important role, namely the teacher. A teacher is the person most responsible for transferring knowledge to students, especially during the COVID-19 pandemic.[9]

The learning process in Indonesia during the pandemic is through an online learning system. No wonder students spend more time using social media in this covid19 era. Based on the survey results, researchers found that 99% of students were actively using social media during the COVID-19 pandemic and 78% of students used Tiktok more than other social media, even Tiktok social media users increased by around 14.3 million per month. The purpose of Islamic education itself is to perfect human morals and to hone talents, where getting education is not only for normal students but also for people with visual

3   Pusat Pemerintah, *Undang-Undang No.20 Tahun 2003 Tentang Sistem Pendidikan Nasional*, (2003: h. 20).

4   Suprihatin, "Upaya Guru Dalam Meningkatkan Motivasi Belajar Siswa". *Jurnal Pendidikan Ekonomi* 3. No. 1. (2015: 73-74)

5   Abdul Hamid, "Guru Profesional", Jurnal *Ilmiah Keislaman dan Kemasyarakatan* 17, No. 2, (2017: 274-275).

6   Darimi, "Peningkatan Kompetensi Pedagogik Guru

PAI Dalam Pembelajaran". *Jurnal Pendidikan Agama Islam* 5. No. 3, (2015: 309-310).

7   Muhammad Zaki, "Pendidikan Agama Islam di Perguruan Tinggi Umum Berbasis Multikulturalisme". *Jurnal Nur El-Islam 2. No. ,* (2015:42-43).

8   Farimayanti, "Implementasi Pendidikan Nilai Dalam Pendidikan Agama Islam", *Jurnal Pendidikan Islam* 8, No. 11, (2017: 240).

9   Sholeh, "Konsep Pendidikan Islam Yang Ideal: Upaya Pembentukan Kepribadian Muslim", *Jurnal Al-Hikmah 13, No. 1, (2016: 60).*

impairments.[10]

Tiktok is an application on the android platform that provides creator and entertainment content. It has been around since September 2016 this platform allows users to create their own creative videos. Tiktok is an application that is increasingly booming in Indonesia, tiktok is also used from various circles, ranging from content creators to even educators. Tiktok can be used for branding a product, providing motivation, information and talent shows that can help independent learning.

Independent learning tends to make students not serious in learning, especially in PAI learning. PAI is one of the 3 important factors that must be included in the curriculum in Indonesia. Because it aims to shape the morals of students. The success of the teaching and learning process, especially in PAI learning is largely determined by the learning media used.[11]

Learning media are all forms of means used in the delivery of information for learning so that messages or materials are conveyed properly. The communicative process that takes place in the system, the learning media get a very valuable position in the learning process. Without communication media, it will not go well so that the learning process cannot take place optimally. The right to get facilities in education is the right of all citizens so that the learning process can be optimal.

The rights inherent in humans are human rights. Human rights are defined as something that is important in human life in becoming citizens. Human rights are basic rights that have existed since humans were born. Human rights are rights that cannot be ignored. Human rights cannot be contested because human rights are natural and

apply throughout human life.[12]

The rights of Indonesian citizens include the right to education. Getting a proper education as a citizen is very important in living life, especially in the face of increasingly fierce competition in the era of globalization. Article 31 of the 1945and Article 28C, paragraph 1 of the 1945 Constitution mandates that education is a right for every citizen. The constitutional mandate clearly states that every citizen without exception has the right to education, including children with visual impairments.[13]

In the sense that not only normal students are entitled to education but persons with disabilities are also entitled to the same facilities. This has been regulated in Article in Law No. 8 of 2016, which regulates the right to education for persons with visually impaired disabilities. In the current era of digitalization, the success or failure of learning is largely determined by the learning media used.[14]

But what is happening now is the problems experienced by people with visual impairments in obtaining books and learning media. This is due to the lack of special attention in facilitating books and learning media for children with visual impairments. In fact, the number of people with visual impairments in Indonesia reaches 1.5% of the total population of Indonesia. Based on data from BPS (Central Statistics Agency) in 2010 shows that the total population of Indonesia is 237,641,326 people. From this number, it can be concluded that there are 3.5 million people with visual impairments in Indonesia.[15]

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10 Almira Devita Putri, "Maksimalisasi Media Sosial Untuk Meningkatkan Pendapatan dan Pengembangan Diri Generasi Z Di MAN 1 Pasawaran", *Jurnal Of Social Sains And Tecnology For Comunity Service* 2, No. 2, (2021: 37-38)

11 Kanisius Supardi, "Media Visual dan Pembelajaran IPA Di Sekolah Dasar", *Jurnal Inovasi Pendidikan Dasar* 1, No. 2, (2017: 160).

12 Nadziroh, Chairiyah, Wachid Pratomo, "Hak Warga Negara Dalam Memperoleh Pendidikan Dasar", *Jurnal Pendidikan* 4, No. 3 (2018): 400.

13 Eka Irma Mardiyanti, "Pemenuhan Hak Atas Pendidikan Bagi Anak Penyandang Disabilitas Mental Di Provinsi Daerah Istimewa Yogyakarta", (*Skripsi,* Universitas Islam Indonesia Yogyakarta, 2017), 1-2

14 Akhmad Sholeh, "Islam dan Penyandang Disabilitas: Telaah Hak Aksesibilitas Penyandang Disabilitas Dalam Sistem Pendidikan Di Indonesia", *Jurnal Studi Gender* 8, No. 2, (2016: 320).

15 Livia Agna Putri, "Euclidean Voice: Aplikasi Pembelajaran Geometri Euclid Berbasis Android Untuk Penyandang Tunanetra", *Jurnal Ilmiah Matematika Realistik* 1, No. 2, (2020: 23-24).

According to a representative from Mitra Netra Foundation, Aria, IKAPI (Indonesian Publishers Association) publishes 10,000 books per year, and as many as 100-150 books are retyped for the blind. This means, books in braille that can be read by the visually impaired are only 10%-15% of the total books released to the market. The books are also only in certain categories, such as school textbooks. Meanwhile, the availability of books for the blind is still limited and not balanced with the number of blind people.[16]

Blind is a term used to describe the condition of patients with visual impairment, so that the eye cannot function properly. To overcome this problem, blind people will utilize the senses of hearing and touch intensively.

Various kinds of assistive devices have also been developed to suit the condition of the blind. These tools can certainly be used through compensation for other senses that are still functioning, namely hearing and touch.

However, not all assistive devices that have emerged can be enjoyed by blind people equally. Because to fulfill blind facilities requires a lot of money. Limited distribution and limited funds are obstacles in this regard. Especially for the procurement of technology-based blind facilities that are starting to develop, it will require relatively expensive costs so that they cannot be accessed by all persons with disabilities

The next problem is that the teacher is still monotonous in the use of learning media. Based on the results of a survey through google form 81% of students stated that teachers still use the lecture method when studying, while 67% of students cannot understand the subject matter only with notes given by the teacher and 93% of students prefer to use learning media in the learning process and 91% students agree with the development of technology-based modules in the learning process.

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16 Eta Yuni Lestari, Slamet Sumarto, Noorahman Isdaryanto, "Pemenuhan Hak Bagi Penyandang Disabilitas Di Kabupaten Semarang Melalui Implementasi Convention On The Rights Of Persons With Disabilities (CPRD) Dalam Bidang Pendidikan", *Jurnal Integralistik* 28, No. 1, (2017: 9-10).

And the lack of learning media for blind people, which is only 15% of the number of blind people. Based on the initial observations, the authors observed 2 main schools in Kerinci Regency, namely MTS Terpadu Darunnajah and SMPN 10 Kerinci. Based on data either directly or via google form, the author found that 56% of class VII students found it difficult to understand the subject matter of Islamic cultural history, seeing these problems the author made a new innovation in the learning process in the form of the Ar-B (Augmented Reality and Braille) Module innovation. Tiktok-based PAI learning media.

The formulation of the problem in this study is the extent to which the level of validity of the learning media prototype for the Ar-B (Augmented Reality and Braille) Module in fulfilling the right to education for people with visual impairments? How is the grade VII student at MTsS Terpadu Darunnajah after using the Ar-B (Augmented Reality and Braille) Module learning media for Tiktok-based PAI learning media innovation?.

The purpose of this study is to determine the level of validity of the learning media prototype for the AR Module (Augmented Reality and Braille) in fulfilling the right to education for people with visually imperest. To find out how the grades VII students at MTsS Terpadu Darunnajah after using the Ar-B (Augmented Reality and Braille) Module learning media, the Tiktok-based PAI learning media innovation.

METHOD

In this development the author this should be better explained in the next section uses the type of research R & D (Research and Development). The steps of this research use the model proposed by Borg and Gall in Herlina research which has ten working steps which include: a) Initial information collection b) Planning c) Initial form development d) Small-scale trial e) Product revision f) Testing limited trial g) Product revision h) feasibility test i) Product revision j) Dissemination and implementation.

The selection of the study used the Borg and Gall model because it has high validation that has been tested by several experts. The purpose of the model itself is to develop an effective model or product to meet the interests of certain program activities, which in this study emphasizes the analysis of student needs. However, in this study, researchers only reached the fifth stage, namely product revision.

Figure 1. The stages of the Borg and Gall method that are in accordance with the author's research
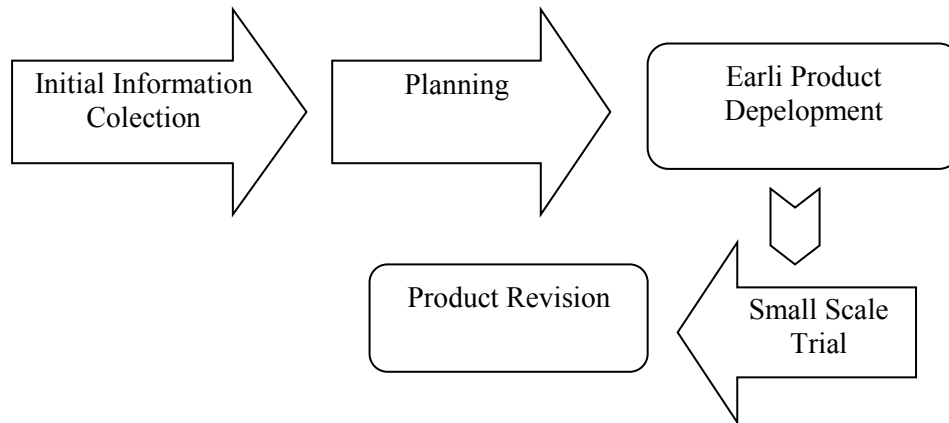
In this development research, the author is only at stage five, namely product revision according to which has been modified by Cuningham in Borg and Gall, namely: 1) reviewing initial information about product needs 2) planning goals to be achieved 3) developing initial products 4) trial on a small number of subjects. In addition, in this study the limitations of researchers are only able to conduct R&D research on a limited scale, but it is felt that it has fulfilled the core of development research.

The development procedures in this study are: a) initial information collection: The research begins with the collection of information as a basis for developing teaching materials to find out the existence of this, the researchers need a needs analysis. This stage was carried out through distributing questionnaires to students on August 16, 2022, starting at around 11.00 WIB at the Darunnajah Integrated Islamic Junior High School in Bumbun Duri village, Gunung Tujuh District, Kerinci Regency. The author distributes a questionnaire with the aim of knowing the reality in the field related to learning media for the Ar-B Module (Augmented Reality and Braille). And analyze the problems that exist during the learning process carried out in the classroom so far. In needs analysis, the writer analyzes three analyzes, namely, resource analysis, curriculum analysis and student analysis.

b) Planning: From the output of the initial information collection carried out by the author through the distribution of questionnaires, the next step for the researcher is to plan related learning media that will be developed in the form of learning media for the Ar-B (Augmented Reality and Braille) Module c) product trials, d) product revision.

Tabel 1. Story Board

No	Story Board	Information
1.		The picture beside is an animation of learning media for the Ar-B Module (Augmented Reality and Braille). This learning media is in the form of a book that is equipped with attractive colors presented with animated cartoons of Islamic children with easy-to-understand explanations. This module is equipped with an Ar code that can display 3-dimensional learning videos. This module is also equipped with a Qr code that can be directly connected to Tiktok social media with easy-to-understand creator content. and equipped with Braille letters that can be used by people with visual impairments.
2.		The picture beside is an animated picture of the first page of the Ar-B Module where on each sheet there is a brief explanation of SKI grade VII curriculum 2013 presented with animations and attractive colors and very easy to understand material.
3.		The picture on the right is an animation of the second page of the Ar-B module where there is braille for the visually impaired. It is also equipped with an Ar code that can display 3-dimensional learning videos. There is also a Qr code that can be directly connected to Tiktok social media so that fun SKI learning content videos appear

Augmented reality is a technique that incorporates 3D virtual objects into a real environment. Ar is a technology that can process or unite the real world with the virtual world at the same time. The sophistication of this technology can broadcast the virtual world to the real world with the help of an Android cellphone or special glasses. In his research, Andri Chowanda explained that augmented reality is a technology that combines virtual objects generated by computers with the real world of interactive augmented reality. The use of augmented reality technology is very easy, namely by downloading an application on the playstore, namely the asmbler edu application. Then create a project as you wish and we will be given a QR code so that it can be scanned and bring up advanced AR technology.

Data collection techniques in this learning media are, questionnaires, observations, documentation, literature studies and test questions. The data collection techniques are as follows: The questionnaire used in this case is a closed questionnaire, namely a questionnaire that has been provided with answers, so that respondents just choose and answer directly. Observations made by researchers are to find initial information so that results are obtained for the development of the initial prototype. The documentation carried out by the researcher is to study the K13 document, both document 1 and document 2 at the Darunnajah Integrated MTsS. Literature study or commonly known as literature study is one of the most popular data collection methods. Test techniques include written tests,. Test instruments can be used in the form of exam questions (test questions) and inventory.

The data analysis technique in this study is media validation and material validation is made with a rating scale with a maximum score of 4 and the lowest score of 1.

Table 2

No	Score	Information
1	4	Very Valid
2	3	Valid
3	2	Enough Valid
4	1	Invalid

Source : Ari Kunto (2010)

The data obtained were tabulated and the presentation sought was analyzed. Calculation with the formula:

$$P = \frac{\sum R}{N} P = \frac{\sum R}{N} \text{x } 100\%$$

Information:　P　= Score Presentation

$\sum R$ = Total Validator Score

N　= Maximum Total Score

Table 3

No	Interval Skor	Kategori
1	81-100%	VeryValid
2	61-80%	Valid
3.	41-60%	Enough Valid
4.	21-40%	Not Enough Valid
5.	0-20%	Invalid

The average of the validation results can be calculated using the following formula:

$$Average = \frac{Total\ Score Total\ Score}{Total\ Item Total\ Item}$$

The trial questionnaire was made using the Guttman scale with a maximum score of 1 and the lowest score of 0. The categories of the Guttman scale are described in the following table:

Table 4

No	Kategori	Skor
1	Agree	1
2	Don't Agree	0

Source: Ari Kunto (2010)

The data obtained were tabulated and the presentation sought was analyzed. Calculation with the formula:

$$P = \frac{\sum R}{N} P = \frac{\sum R}{N} \text{x } 100\%$$

Information: P　= Score Presentation

$\sum R$ = Total Validator Score

N　= Maximum Total Score

FINDINGS AND DISCUSSION

Starting from the problem of how to make students understand the material presented well because based on the survey results 67% of students cannot understand the subject matter only with explanations and notes given by the teacher. And during the COVID-19 pandemic, students tend to be more active in using social media, especially Tiktok social media which has an impact on knowledge in the field of education. The lack of development of learning media in the field of Islamic religious education between science or technology and religion and also no learning media for people with visual impairments. For this reason, the Ar-B (Augmented Reality and Braille) module comes with the sophistication of Ar technology which can display 3-dimensional learning videos and is equipped with a Qr code that can be directly connected to Tiktok social media so that learning is not boring. This multi-interpretation-based learning media is not only intended for ordinary students but can also be used by blind people.

A. Innovation Desain

In accordance with the results of the survey that the author did, from the questionnaire distributed the authors found that 86% of students tended to prefer the color blue and 79% of students tended to like animated cartoons for Islamic children and 55% of students had difficulty understanding Islamic cultural history subjects and 100% of students had used Android-based smartphones with 78% longer using Tiktok social media and also the lack of learning media for people with visual impairments. From the results of the analysis of these needs, the author makes a design for the innovation of learning media for the Ar-B (Augmented Reality and Braille) Module for Tiktok-based PAI learning media innovations. It has taken advantage of the sophistication of augmented reality technology that can display 3-dimensional learning videos and this learning media is equipped with a Qr code that can be connected directly to Tiktok social media which displays an explanation of SKI learning for class

VII K13 with video creators made directly by the author. The learning media for the Ar-B module is presented in writing that is understood by students. This media is also equipped with braille letters that can be used by blind people in the learning process.

Figure 2. Learning Media for Ar-B . Module

B. Product Specification

The development of learning media in the form of the Ar-B (Augmented Reality and Braille) Module for Tiktok-based PAI subjects is a medium for learning the history of Islamic culture used by class VII K13. This module presents material about the situation of the people of Mecca before Islam, the purpose of the da'wah of the prophet Muhammad in Mecca and how the system of da'wah of the prophet Muhammad in Mecca and Allah's revelation about the command of da'wah.

The specifications of the learning media for the Ar-B Module are: the Ar-B (Augmented Reality and Braille) module. Tiktok-based learning media innovation has used advanced augmented reality technology that can display 3-dimensional learning videos and is equipped with a Qr code that can be directly connected to social media. Tiktok so that it displays video content of researchers' creators regarding a brief explanation of the VII grade SKI material. The learning media for the Ar-B module is also equipped with braille letters that can be used by people with visual impairments. On this sheet there are also Qr and Ar codes which when scanned using an Android-based smartphone can display 3-dimensional creator videos and tiktok videos with Green Screen technology so that audio and visual appear so that learning is not boring.

C. Manufacturing Process

The process of making the Ar-B Module learning media are:

1. The first step is to prepare an Android-based printer and smartphone, download the Qr Generator, Edu and Tiktok Generator applications. then create content using the Green Screen on the Tiktok application and design the material you want to explain. Then make a Qr code from the Tiktok video link using the Qr Generator. And prepare a 3-dimensional learning video made using the Asembler Edu application.

Figure 3. Using the Green Screen in the TikTok Application
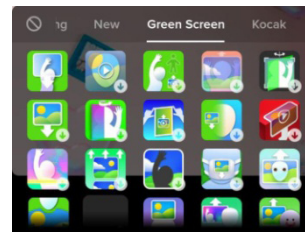
2. The next step is to prepare HVS paper and renglet and make lesson material using renglet so that material is formed in the form of braille letters that can be used by blind people. After all the materials are ready, the next step is to print the media using Art Paper and the media is ready to use.

D. Advantages And Disadvantages

The advantages of this product are:

1. The Ar-B module is equipped with advanced augmented reality technology so that it can display 3-dimensional learning videos so that learning activities become more enjoyable. The Ar-B module is also equipped with a Qr code that can be directly connected to Tiktok social media so that the material taught can be easily understood through author content and Tiktok is no longer considered a social media that is only for music videos but can also have an impact on the world of education.

2. The Ar-B module is also equipped with braille which can be used by people with visual impairments to study. The Ar-B module has the advantage of being a learning module for students during a pandemic which can make

it easier for students to study independently. Equipped with attractive and concise colors and presentation.

However, the disadvantages of this learning media are: The Ar-B module uses advanced technology and utilizes the internet network so that when there is a disturbance in the network, it can only learn through the module without using Tiktok videos and augmented reality videos.

E. Presentation Of Trial Data

1. Needs Analysis

   At this stage the authors analyze the resources, curriculum and students. students tend to prefer the color blue and have difficulty understanding Islamic cultural history lessons and they have used Android-based smartphones with the use of Tiktok social media compared to other social media.

2. Planning

   Designing the design of the Tiktok-based Ar-B Module learning media according to the results of the needs analysis so that an initial prototype is formed.

3. Early Product Development

   At this stage, a learning media prototype design has been formed so that it can be validated by experts. After the validation is complete, prototype 1.

Table 5 Validation Results of Material Experts and Media Experts

No	Validator	Media Ru-Ar Validation Result	
		Score (%)	Category
1.	Validator 1 Media Expert	100%	Very Valid
2.	Validator 2 Media Expert	92%	Very Valid
3.	Validator 3 Media Expert	83%	Very Valid
4.	Validator 1 Material Expert	92%	Very Valid
5.	Validator 2 Material Expert	97%	Very Valid
6.	Validator 3 Material Expert	92%	Very Valid
Total		556%	
Average		92%	
Category		Very Valid	

4. Trials

   After conducting expert validation, the next step is a limited-scale product trial, which is only tested on 6 students.

Table 6 Comparison of values before and after using Ru-Ar . media

No Responden	Initial Value	Final Score
Responden 1	25	62
Responden 2	62	81
Responden 3	81	87
Responden 4	68	68
Responden 5	43	62
Responden 6	75	87

CONCLUSION

A 92% validity rating for the Ar-B (Augmented Reality and Braille) Module indicates that this learning tool is reliable and testable. With tiktok movies and 3-dimensional learning films, the Ar-B module can enhance student learning outcomes while also making learning more enjoyable. Due to the short amount of time available for conducting research and the requirement for just 3 media specialists and 3 material experts, the design of the learning medium for the Ar-B (Augmented Reality and Braille) Module utilizing the Borg and Gall development research approach only reached phase 5.

Based on the limitations of the research found by the researcher, suggestions for other researchers who will develop learning media for the Ar-B Module are as follows: Deepen the learning material for the history of Islamic culture and look for research places that provide wifi so as not to experience network disturbances when scanning QR and Ar codes.

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