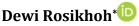


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# Development of mathematics teaching materials: Internalizing Al-Qur'an, Hadith, Madurese culture, and religious moderation



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#### Abstract:

The existence of a mandate from the Ministry of Religion regarding the integration of religious knowledge and science, as well as the internalization of religious moderation in every subject in class, had implications for the movement to develop learning media. One form of learning media was teaching materials. This development research aimed to design a fraction of teaching materials based on the al-Qur'an and hadith with internalizing religious moderation and Madurese culture for grade V elementary schools in Pamekasan and then test its validity. This research was development research using the ADDIE model. Meanwhile, testing the validity of teaching materials used expert and practitioner validation with questionnaire instruments. The research results showed that based on validation questionnaires for material experts, learning experts, Islamic religious experts, and practitioners, the teaching materials developed could be categorized as valid with an average score of 92%. Thus, teaching materials could be continued at the trial or field test stage. Apart from that, similar teaching materials could be developed on other mathematics topics at the elementary level, or similar teaching materials could be produced on the same issues but by internalizing the culture of each region.

**Keywords:** Al-Qur'an; Development; Hadith; Madurese Culture; Mathematics Teaching Materials; Religious Moderation.

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## Introduction

Religious moderation is a new challenge for educators. It is caused by the Ministry of Religion program, which promotes religious moderation to be internalized through classroom learning (Husna & Thohir, 2020; Sutrisno, 2019). Internalizing religious moderation through classroom learning aims to instill a moderate attitude to protect students from extremism. From the Indonesian Ministry of Religion's perspective, religious moderation is an attitude and view that rejects extremism with the basic principles of balance and fairness (Junaedi, 2019).



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On the other hand, the massive development of technology and social media has implications for the new normal. Foreign cultures have unconsciously colonized local cultural riches (Lieberman & Miller, 2021). The current generation, better known as Gen-Z, is more familiar with foreign culture than regional culture or the culture of their own country. Based on field observations, students in elementary school rarely know what fraction numbers are called in their local language. Students at elementary schools also need to learn that local units are owned by the area where they live. In a country with a Muslim majority population, Indonesia, many cultures are born from religious activities (Solehuddin & Adriany, 2017). Madura is one of Indonesia's regions, and its culture is born of religious activities.

Madura is one of Indonesia's regions that has the characteristics of a religious population. It can be seen from several indicators, including the number of Islamic boarding schools in Madura (Achmad et al., 2021; Alim, 2016; Hamzah, 2016; Jannah, 2019; Qadariyah, 2019). Another indicator is the ownership of violations in almost every resident's house in Madura. *Langgar* is a building around the house built specifically for carrying out prayers and other Islamic worship activities. Also, elementary school-age children who go to *Madrasah Ibtidaiyah* every morning do not finish their activities when they get home. They returned to study at the Madrasah Diniyah in the afternoon, usually called the *Abhen* school. It is done to deepen knowledge of the Islamic religion, including knowledge of the al-Qur'an and hadith. In the evening, precisely after sunset, the children reread the al-Qur'an. These assets owned by Madura must be maintained, preserved, and continuously developed.

One effort to preserve the religious assets of the Madurese population is by internalizing al-Qur'an and hadith, Madurese culture, and religious moderation in mathematics learning in formal schools. It can undoubtedly have an impact on contextual and meaningful learning. It also eliminates the barrier between general subject matter and Islam (Anshar, 2017; Rosikhoh et al., 2021). The previously prevailing paradigm expressed that the general subject matter and Islam were different and separate things (Rusdiana, 2014). All instilling values must be taught early (Anwar, 2021; Faiqoh, 2015; Khasanah, 2021; Sumadi et al., 2019; Suri, 2021). It is intended so that the values instilled can stick and become the foundation for dealing with all the negative influences encountered when students are teenagers. It includes religious values, religious moderation, and maintaining culture. One medium for internalizing these values in classroom learning is developing teaching materials.

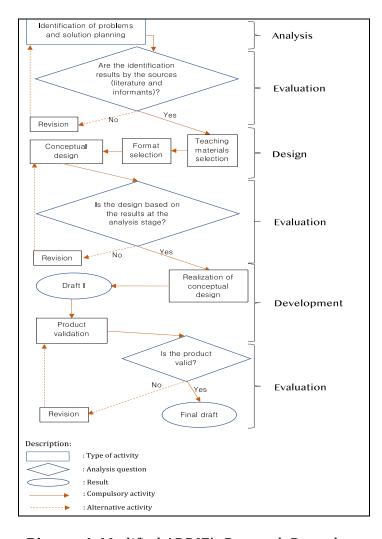
The development of mathematics teaching materials at the elementary school has been carried out. In particular, teaching materials on fractional numbers (Desri, 2021; Ilahiyah et al., 2019; Maghfiroh & Hardini, 2021; Mailani & Wulandari, 2019; Marhamah et al., 2022; Mulia et al., 2022; Pribadi et al., 2021; Putra, 2021; Wahyuningtyas & Pratama, 2018). However, these teaching materials have not integrated the al-Qur'an and hadith, internalized culture, or internalized various moderation. There is the development of al-Qur'an-based mathematics teaching materials on fractions for *Madrasah Ibtidaiyah*, which is motivated by the weak learning motivation of students (Ihsan, 2019). Elementary school mathematics teaching materials are also developed based on regional culture (Nasution & Sukmawarti, 2022; Sukmawarti & Pulungan, 2020). However, mathematics teaching materials that internalize religious moderation have yet to be developed.

Based on previous research, developing teaching materials can be a medium for overcoming problems in mathematics learning. Based on previous research,

mathematics teaching materials that internalize religious moderation are also challenging to find. Thus, it is essential to develop mathematics teaching materials that integrate the al-Qur'an and hadith and internalize Madurese culture and religious moderation. Therefore, this research focuses on designing and testing the validity of a fraction of teaching materials based on the al-Qur'an and hadith with internalizing religious moderation and Madurese culture.

## **Research Methods**

This research is development research to produce mathematics teaching materials based on the al-Qur'an and hadith with the internalization of religious moderation and Madurese culture to test the validity of these products in facilitating the learning of fraction material at the *Madrasah Ibtidaiyah* level in Pamekasan. The development model used is the ADDIE model (Martin & Betrus, 2019). This article presents the research results at the development stage, consisting of the draft and validity test of teaching materials developed using procedures as in Picture 1. Testing effectiveness at the implementation stage will be explained in another article. The reason for using the ADDIE model is that it is effectively used in developing teaching materials (Rosikhoh et al., 2021).



Picture 1. Modified ADDIE's Research Procedure

The instrument used in this research is a questionnaire to measure the validity of teaching materials. The validation questionnaire was prepared to assess material content, learning, integration of the al-Qur'an and hadith, internalization of religious moderation and internalization of Madurese culture, and practical aspects. The data collection technique was done by giving expert lecturers and teacher practitioners questionnaires. The validator qualifications are mathematics material experts, mathematics learning experts, and Islamic religion experts with a minimum of 10 years of teaching experience and a minimum education qualification of S3. The practitioner qualifications are mathematics teachers or class teachers at *Madrasah Ibtidaiyah* who have a professional teaching certificate or have a minimum of 10 years of teaching experience. The results of expert and practitioner assessments are used to revise the teaching materials developed. The scoring criteria for assessing validity instruments on the questionnaire sheet are shown in Table 1. Quantitative data was analyzed using statistical analysis to calculate the percentage of questionnaire scores.

Table 1. Validity Instrument Assessment Score

Score	Indicators
1	Not good/not suitable
2	Fairly good/fairly suitable
3	Good/suitable
4	Very good/very suitable

Adapted from Zunaidah and Amin (2016)

The calculation of the questionnaire score percentage is shown below.

$$P = \frac{\sum X}{N} \times 100\%$$
, and  $NA = \frac{\sum P}{n}$ 

Where:

*P* : Score Percentage

 $\sum X$ : Number of answers for each respondent for each question or statement

N : Maximum total answer scoren : Many questions or statements

 $\sum P$ : Total percentage score.

Based on the statistical analysis results, a qualitative descriptive analysis was then carried out to determine the validity of the teaching materials. The percentage assessment data obtained was then converted into descriptive verbal data by referring to the validity guidelines, as shown in Table 2, as a basis for concluding. Qualitative data was obtained from comments and suggestions on expert and practitioner assessment questionnaires. This data is used as suggestions for revising teaching materials to become perfect. The indicator of success in this research is if the teaching materials developed are in the valid category. Teaching materials in this study are valid if, on average, all aspects assessed meet the valid and very valid qualifications.

Table 2. Validity Criteria for Teaching Materials

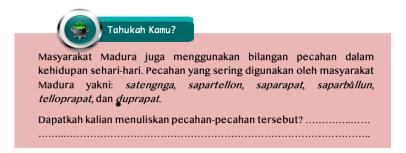
NA Percentage (%)	Qualification	
85 < NA ≤ 100	Very valid	
$70 < \text{NA} \leq 85$	Valid	
$55 < NA \le 70$	Fairly valid	
$40 < NA \le 55$	Not valid	
$0 \le NA \le 40$	Invalid	

Rosikhoh (2021)

## **Results and Discussions**

Design

The interview results regarding fractions from the cultural perspective of the Pamekasan community are in two aspects: the language aspect and the local measurement unit aspect. In terms of language, Pamekasan people often use the Madurese language in their daily lives. The fractions commonly used in the daily life of the Pamekasan people, which are internalized in the teaching materials developed, are shown in Picture 2.



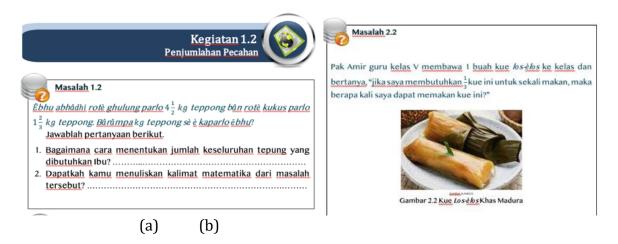
Picture 2. Fraction Numbers Often Used in Madura

Furthermore, based on the interview results, the Pamekasan community has a local unit of measurement to facilitate buying and selling transactions. These local units of measurement can be internalized in teaching materials, as in Picture 3.



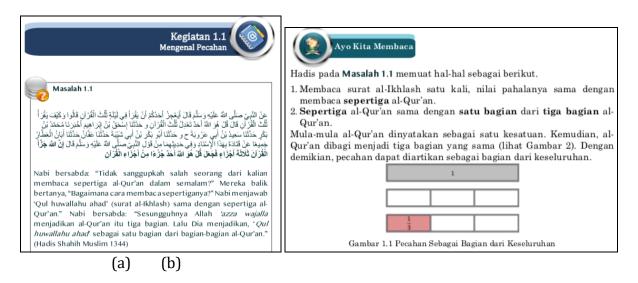
**Picture 3.** Traditional measuring instruments used by Madurese people

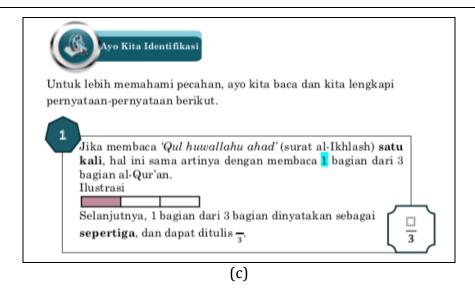
Based on the presentation of this data, findings related to fractions in teaching materials can be internalized as information about fractions from a Madurese cultural perspective. As for teaching materials, the information is presented with the points "Did you know?" in Learning Activity 1.1, Learning Activity 1.2, and Learning Activity 2.1, as in Picture 4. In addition, one of the problems is presented in the Madurese language, and there is a display of typical Madurese food, as in Picture 4.



Picture 4. Example of questions using Madurese

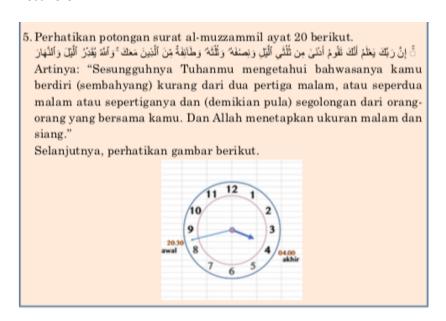
The concept of the number of fractions in the hadith in this developed teaching material uses previous research (Rosikhoh & Abdussakir, 2020). In addition to developed teaching materials, the framework or design of learning fractions based on the al-Qur'an and hadith has been offered by Rosikhoh et al. (2022) among the hadiths used in the teaching materials developed in Picture 5.





**Picture 5.** One of the Hadiths Integrated in the Teaching Materials

The verses of the Al-Qur'an used in the teaching materials developed among them are shown in Picture 6.



**Picture 6.** Al-Qur'an Verses Used in Teaching Materials

Talking about the closeness of mathematics and culture is nothing new. Previous research has extensively used culture in mathematics learning, for example, traditional games in mathematics learning (Mulyasari et al., 2021; Rosikhoh & Abdussakir, 2020; Turmudi et al., 2021). Furthermore, talking about the integration of Islam and science, there has never been a dichotomy between Islam and science; there is only a hierarchy of knowledge (Yusuf, 2022: 7). This is reinforced by the many verses of the al-Qur'an and hadith which state or encourage Muslims to master science in various language styles (Kamil, 2022: 40-41).

"There is no conflict related to differences in beliefs or religion," was the answer from one of the Pamekasan residents. Madura, especially Pamekasan, does not have

conflicts related to religious differences. It is, among others, because the average community adheres to Islam. It is supported by data from 2020 with details: 842215 Pamekasan residents are Moslems, 496 are Protestant, 482 are Catholic, 23 are Hindu, and 56 are Buddhist (Pamekasan, 2020). However, the conflicts that often arise are conflicts between fellow Muslims. What triggers conflict is ideological differences in understanding and applying the teachings of the Islamic religion.

In addition, when parents have a limited amount of food to give to their children, parents usually share the food, even if they have to cut it into several pieces. Such behavior is a form of manifestation of the value of balance and justice. It is one of the values of religious moderation that parents have unknowingly taught and instilled in their children.

Forms of religious moderation that can be instilled include faith, worship, morals, and reading the al-Qur'an. Meanwhile, Ubaidillah in the module published by the KSKK *Madrasah* Directorate, the Directorate General of Islamic Education, Ministry of Religion of the Republic of Indonesia has offered various topics related to religious moderation and how to teach these topics (Ubaidillah et al., 2019). These topics are friendship, respect for other people, caring for the environment, language, flags, and national songs, getting to know religious holidays, religious places of worship, religious holy books, and polite attitudes. The delivery methods are habituation, field trips, storytelling, roleplaying, and others.



**Picture 7.** Example of Internalizing Religious Moderation in Teaching Materials

Based on the data above, the teaching materials developed in this research were adopted and adapted to the topics and methods offered by Ubaidillah by considering or adapting them to the conditions of the Pamekasan community. The topics adapted are related to friendship and respect for other people (including respecting people of different religions). The story method is adopted and presented using a text-like model in a WhatsApp chat. The internalization of religious moderation in the developed teaching materials is presented with the menu "Did You Know?" in Learning Activity 1.3 and Learning Activity 2.2, as in Picture 7.

## Development

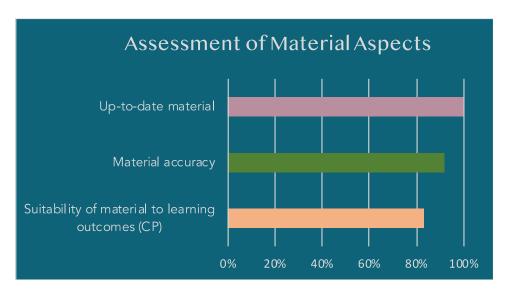
# Validity of Teaching Materials

The results of expert and practitioner validation are shown in Table 3. The validation results in Table 3 were taken before the teaching materials were revised. Apart from that, in the language aspect, the teaching materials developed have also been corrected by Madurese language experts from Madurese cultural activists.

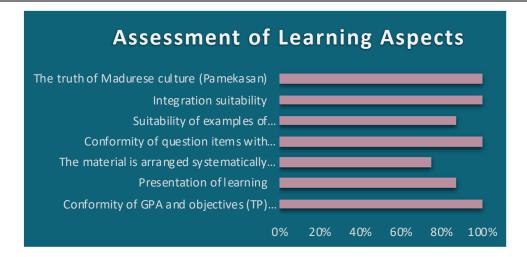
No.	Aspects Assessed	NA Percentage (%)	Qualification
1	Material	90%	Very valid
2	Learning	93%	Very valid
3	Integration and	95%	Very valid
	Internalization		
4	Practicality	90%	Very valid
	Average	92%	Very valid

**Table 3.** Results of Validity of Teaching Materials

Based on Table 3, each aspect gets a score above 85%. It means that the teaching materials developed are of very valid qualifications. This way, the teaching materials produced can be continued at the trial stage without being revised.

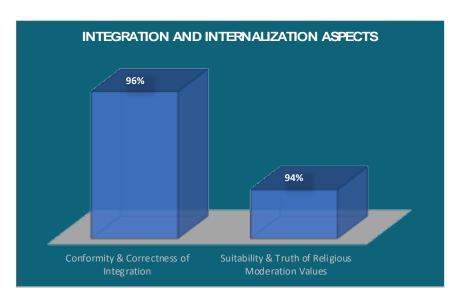


**Picture 8.** Diagram of Material Aspect Validation Results



Picture 9. Diagram of Learning Aspect Validation Results

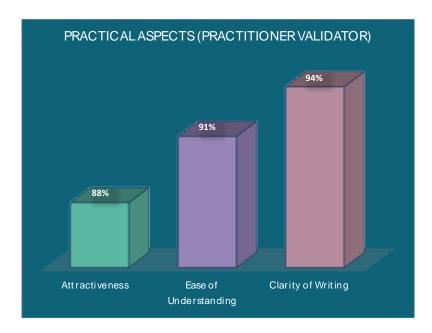
The aspects of each assessment component are presented explicitly in Pictures 8 and 11. Picture 8 displays the elements of the material component assessment. Picture 9 shows aspects of the learning component assessment. Picture 10 displays elements of the religious integration and moderation component assessment. Picture 11 displays aspects of the practicality component assessment.



**Picture 10** Diagram of Validation Results for Religious Integration & Moderation Aspects

Even though the scores for each aspect are high, the validators still provide notes, both notes in the form of comments and notes in the form of suggestions. The remarks of the material and learning expert validators are that some of the writing needed to be corrected, the color selection needed to be rechecked, and several notes are in the manuscript. Suggestions from material and learning expert validators are that the design still allows improvements to make the appearance more attractive, it is necessary to emphasize the definition of pure, mixed, and unit fractions, and the definition of fractions in writing a/b needs to be revised that a/b is an integer, part of supporting

religious moderation more is required. The PBL flow and scientific approach need to be emphasized according to the stages.

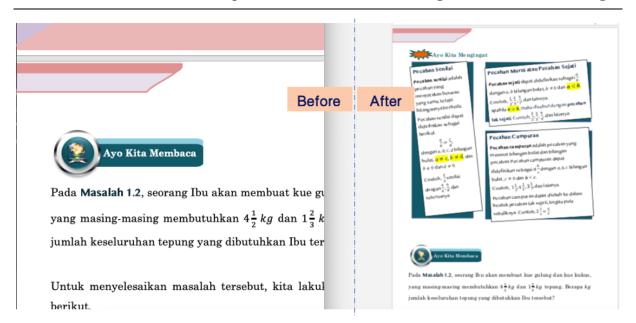


Picture 11 Practitioner Validation Results Diagram

Furthermore, the Islamic religious expert validator commented that the teaching materials developed were suitable for cultivating Islamic values in religious moderation and Madurese (Pamekasan) culture. The validator, an expert on Islamic religion, then continued to comment that the teaching materials being developed need to be perfected by further strengthening Madurese cultural nuances in the example of mathematics narratives, religious moderation in the lives of children who use mathematics, and the text of the al-Qur'an/hadith should be presented textually and its interpretation in mathematic lives. Another Islamic expert validator commented that some of the writing was more meaningful, but some of the writing in Madurese needed improvement. The validators from practitioners only commented that the teaching materials developed were good enough to understand. Meanwhile, for suggestions, practitioners stated that Madurese's language writing needed to be improved.

Not all comments and suggestions from validators can be disallowed by researchers. Several comments and suggestions have been used as material for revision. The parts that have been revised, namely the Madurese language writing, have been corrected. The definition of fractions related to writing a/b needs to be revised so that a/b is an integer, which has also been corrected. Several notes in the manuscript from material and learning expert validators have also been corrected. The choice of text color according to the material and learning expert's notes in the teaching material manuscript being developed has also been corrected.

Regarding the definition of pure fractions, mixed fractions, and unit fractions, they are prerequisite materials studied by students in previous material or prior levels. Apart from that, this material has been included in the attachment section of the module being developed. However, revisions are still being made to this section, as shown in Picture 12.



**Picture 12** Revision Displays Prerequisite Material in Teaching Materials

This research indicates that mathematics teaching materials based on the al-Qur'an and hadith and the internalization of religious moderation and Madurese culture are declared valid. It is under previous research which states that mathematics learning media can be developed by internalizing regional culture (Hidayat, 2023; Mania et al., 2024; Palinussa, 2013; Rezeki et al., 2021; Saragih et al., 2017; Suddin & Deda, 2020). Previous research on developing mathematics teaching materials internalizing religious moderation still needs to be found. Many Islamic-based teaching materials have been developed, but those focusing on elementary school fractions still need to be seen. As for the al-Qur'an and hadith, religious and cultural moderation must be instilled to become part of students' good character. Character education must be taught from kindergarten to elementary school (Birhan et al., 2021).

## **Conclusions and Suggestions**

Based on the research results, it can be concluded that religious moderation and culture can be internalized in mathematics learning through teaching materials. Religious and cultural moderation internalization can be included in one mathematics learning medium and the integration of the al-Qur'an and hadith. Teaching materials based on the al-Qur'an and hadith, with the internalization of religious moderation and Madurese culture for elementary class V, are valid and have very valid qualifications with an average score of 92%. Therefore, teaching materials based on the al-Qur'an and hadith and the internalization of religious moderation and Madurese culture for elementary school can be carried out on a medium-scale trial or field test. Thus, teaching materials based on the al-Qur'an and hadith with the internalization of religious moderation and Madurese culture can be a medium for forming a generation that is not only intelligent but also faithful, has noble character, and is cultured. Thus, for further research, it is suggested that similar teaching materials on other mathematics topics at the elementary school level or identical teaching materials on the same subject be developed by internalizing the culture of each region.

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