



## Pengembangan Bahan Ajar Menulis Karangan Berbasis Neurosains Terintegrasi Keagamaan di Sekolah Dasar

### Development of Writing Materials for Writing Essay Based on Religious Integrated Neuroscience in Elementary School

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#### Abstract

The main problem in this research is to find out the design of valid teaching materials and the practicality of teaching materials. This research is a Research & Development (R&D) research method. To develop the product, this research uses a 4-D development model consisting of four stages, namely: (1) the defined phase, (2) the design phase, (3) the development phase, and (4) the disseminate stage. This research was conducted in class V of SD Negeri 1 Lalebbata Palopo, which acted as the subject of the study was the fifth-grade students totaling 25 people. Data collection techniques in this study are: observation, documentation, Questionnaire, and Validation. Analysis of the data used by the researcher was to test its validity by using the Aiken's formula and for analyzing student questionnaire response data and observations using descriptive statistical analysis. The results of this study indicate that the integrated religious neuroscience-based teaching material is said to be valid by three validators with several revisions so that it can be said to be valid and can be tested, then this teaching material can be said to be interesting because the results from the questionnaire responses of 20 students tend to agree with teaching material developed. Thus this research needs to be socialized so that it can become a consideration of teachers in schools in improving students' writing skills.

**Keywords:** Development; Neuroscience; Religious; Teaching Materials

#### Abstrak

Pokok permasalahan dalam penelitian ini adalah untuk mengetahui desain bahan ajar yang valid dan praktikalitas bahan ajar. Penelitian ini merupakan metode penelitian Research & Development (R&D). Untuk mengembangkan produk, penelitian kali ini menggunakan model pengembangan 4-D yang terdiri dari empat tahap yaitu: (1) tahap define, (2) tahap design, (3) tahap develop, dan (4) tahap disseminate. Penelitian ini dilakukan di kelas V SD

Negeri 1 Lalebbata Palopo, yang bertindak sebagai subjek penelitian adalah siswa kelas V yang berjumlah 25 orang. Teknik pengumpulan data pada penelitian ini yaitu: observasi, dokumentasi, Angket, dan Validasi. Analisis data yang digunakan peneliti itu untuk menguji kevalidannya yaitu menggunakan rumus Aiken's dan untuk analisis data angket respons siswa dan observasi menggunakan analisis statistik deksriptif. Hasil penelitian ini menunjukkan bahwa bahan ajar berbasis neuorosains terintegrasi keagamaan ini dikatakan valid oleh tiga validator dengan beberapa kali revisi sehingga bisa dikatakan valid dan dapat diuji cobakan, kemudian bahan ajar ini dapat dikatakan menarik, karena hasil dari angket respons siswa yang berjumlah 20 cenderung setuju dengan bahan ajar yang dikembangkan. Dengan demikian penelitian ini perlu disosialisasikan sehingga dapat menjadi pertimbangan guru di sekolah dalam meningkatkan keterampilan mengarang pada siswa.

**Kata kunci:** Bahan Ajar; Keagamaan; Neuorosains; Pengembangan

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## **Introduction**

One of the most important skills in the process of learning Indonesian in primary school is writing skills (Saifudin, 2016). The act of writing is not merely expressing ideas from imagination, but also expressing ideas from knowledge, concepts, feelings, and expectations in the form of writing. This writing is based on a sequence (or a series of) events (Dalman, 2018). The ability to write is a student's skill in communicating well about a fact that has been experienced that is new and comes from the author's real experience in a chronological fashion, with proper character, setting, and is written using proper spelling, variation vocabulary, good grammar, and clear language so that it can be understood by the reader (Zulela, 2014).

However, describing it in a regular written form is not easy, as many people can tell matters within their minds but are not able to describe them well in written form (Alawia, 2019). The problem that is often found in writing learning is that students are not able to master the use of proper Indonesian. Techniques that students need to master is to continuously write what students feel. This method will stream all feelings that still matters to the student and recall positive emotional experiences that will help the presence of feelings of gratitude and positive ideas for the future of the student (Razak, 2019).

According to Widyamartaya dalam Mundziroh, Sumarwati, & Saddhono (2013), writing is a series of activities in expressing ideas and conveying them through written language to the reader to be understood as intended by the author. This certainly requires an adequate level of intelligence. Therefore, it is paramount that the teacher can implicate neuroscience in writing learning. This will increase the structure and meaning of the study and maximize brain function (Munawaroh & Haryanto, 2005). Neuroscience-based learning aims to determine the intelligence preference of students ranging from attitude, behavior, learning abilities, and emotion. Learning neuroscience as a supplement of the existing curriculum is an interesting method to be applied.

Based on observations on March 28, 2018, in grade 5 of SDN 1 Lalebbata where there are 25 students in the class, 7 male and 18 female, the researcher has obtained data that in the learning process some students were passive in following the learning process, especially in writing learning. Students still lack interest and skills in processing words and knowledge into paragraphs or essays due to the lack of use of innovative

teaching materials to increase students' learning motivation. This has an impact on some students not being able to achieve the minimum passing score (KKM) set by the school of 70.

The application of the 2013 curriculum is expected to be able to improve the competitiveness of students in dealing with global issues where in addition to knowledge and skills, students' character is also developed vertically and horizontally between subjects (Rustan, Hanifah, & Kanro, 2018). Creating essays cannot be separated from linguistics, where students can pour their thoughts in forms of written language. Aspects of language and communication of students can be developed through the delivery of written content, while aspects of thinking mean that students can organize ideas or thoughts clearly and logically (Mudiono, 2014).

In writing essay material, one of the ways or innovations that can be used by teachers in developing teaching materials based on religion-integrated neuroscience. Teaching material is a set of materials compiled systematically for learning needs that are sourced from printed materials, visual aids, various forms of multimedia, as well as computer and its network (Yaumi, 2013). The component of teaching materials is important as it can help in achieving expected standards of competence. Learning that does not involve the two functions of the brain will result in the cognitive imbalance of the students, namely the potential of one part of the brain will be weakened due to the lack of use of the foresaid brain part (Karunia, 2014). In this era, children are required to think deeper, where students' language skills can also be developed (Susanto, 2013).

Chaer argues in (Budianingsih, 2015) that in the human nervous system, the brain is the center of nerves, controller of the mind, and center of the language processing mechanism. Therefore, the development of human language is related to brain development. Neuroscience is a learning method related to the intelligence of the learner's brain. Neuroscience believes that certain parts of the brain are responsible for managing the types of human intelligence. Mathematical intelligence and language processing are centered in the left hemisphere of the brain, though mathematics is not strictly confined in the left hemisphere. Musical and spatial intelligence is centered in the right brain. Kinesthetic intelligence is centered in the forehead as it is possessed by the motoric area of the cerebral cortex. Intrapersonal and interpersonal intelligence is arranged in the limbic system and is connected to the prefrontal and temporal lobes. It

turns out that the brain captures all stimuli to be understood through the work of nerve cells, nerve circuits, and neurotransmitters (Wathon, 2016). This stage is where connections between neurons are made to communicate with each other (Jensen, 2008).

In the United States, neuroscience is an important tool for the formulation of an educational curriculum, particularly in the acceleration program as it intends to develop all of the students' potential, and those potentials rely on the brain. The only science that studies the brain is neuroscience, so education must involve neuroscience in it (Suyadi, 2012). Correspondingly, the basis of Islamic education is the optimization of potential. Therefore, neuroscience can be integrated with religion in the preparation of teaching materials that are centered on students' creativity. Learning materials based on religion-integrated neuroscience is expected to direct and maximize all the potential possessed by students in a positive direction.

A module is a written teaching material that aims able students in learning on their own regardless of the availability of mentor who guides them, so the module must contain instructions for learning, subject matter, competencies to be achieved, supporting information, work instructions, and evaluation (Prastowo, 2011). Modules are one of the many forms of instructional materials that are designed systematically and intact, where there is a set of learning experiences in it that is arranged to aid students in learning on their own without any aid (Lestari, 2012). From the various explanations above, it can be concluded that teaching materials in the form of modules are printed materials containing learning objectives as a means of independent learning for students.

The purpose of the use of learning modules according to Suryosubroto in (Wati, 2017), are namely: (1) to promote effectivity and efficiency in learning, (2) to enable students' participation in learning in accordance to their own pace and speed, (3) to enable independent studying without any aid or appreciation from teachers during the learning process, (4) to enable students in assessing their studying result independently, (5) to make students the central point in learning, (6) to enable higher frequency of evaluation through students' achievements, (7) to enable mastery learning-based concept in learning. Therefore, modules are used so students can learn on their own following their desire.

Related to this research of the development of teaching materials, a study is conducted based on previous researches, such as: (1) *Efektivitas Pembelajaran Matematika PiJIES: Pedagogik Journal of Islamic Elementary School*

*Berbasis Neurosains melalui Peta Konsep Terhadap Hasil Belajar Peserta Didik Kelas 8 SMP Negeri 3 Burau Kabupaten Luwu Timur* (Erwin, 2019). 2. Pengembangan Model Pembelajaran Berbasis Neurosains untuk Meningkatkan Karakter Kreatif, Kerja Keras dan Rasa Ingin Tahu (Tanto, 2014). 3. Integrasi pendidikan islam dan Neurosains dan implikasinya bagi pendidikan dasar (Suyadi, 2012).

### **Method**

The research used is Research and Development (R&D). The model used is the 4-D model consisting of four stages of development, namely: define, design, develop, and disseminate. In this study, the author only uses three stages, namely: define, design, and develop, as disseminating stage takes a considerable amount of time and resources. The subject of this research is the 5A class at SD Negeri 1 Lalebbata Palopo in thematic subjects especially non-fiction essay writing. Data collection techniques in this study are namely: questionnaires, observation, documentation, and validation. The data analyzed are the validity of the instrument and the practicality of teaching material through student questionnaire responses.

### **Result**

*Validity Design of Essay-writing Learning Material based on Valid Religion-Integrated Neuroscience*

The format of teaching materials to be developed will go through validations by 3 validators so that the product can be said to be valid when used as learning material within the class. The stages or instructions referred to in this teaching material is the explanation of *Neurosains Terintegrasi Keagamaan* that is used as teaching material for writing in grade 5 of SD Negeri 1 Lalebbata. The explanation referred is as follows:

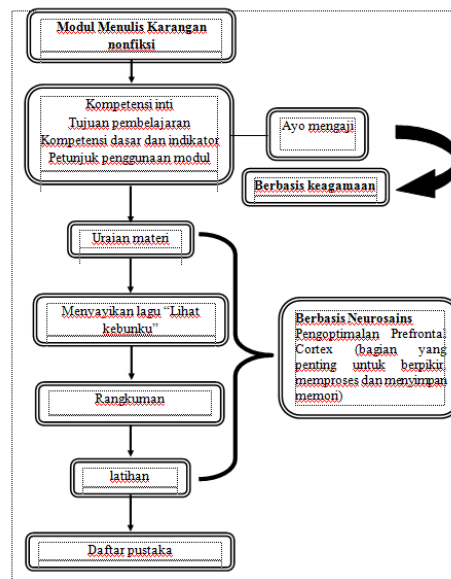
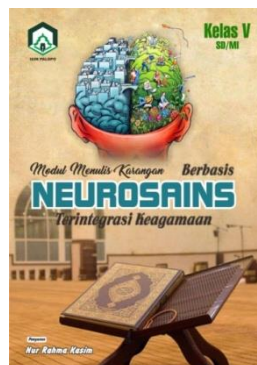


Figure 1. Explanation of the module components of writing based on religion-integrated neuroscience

Broadly speaking the design of teaching materials developed are as follows:

1. Title page

The teaching material begins with the title page of the module with the title of *Modul Menulis Karangan Berbasis Neurosains Terintegrasi Keagamaan*, with picture chosen in addition to the title to spark the interest of the student with an additional stimulus to the eye. It is hoped that this combination can stimulate the eyes to convert stimuli of this book to electrical current in forms of impulses to the brain, where it is directed to the right hemisphere of the brain to increase students' imagination. Furthermore, this title page is hoped to be able to signify the content of this book.



Gambar 2. Halaman judul

2. Competency standards page, basic competencies, indicators, and learning objectives
3. The direction of use for this book, containing an overview of the contents of teaching material. The direction of use in this book contains an overview of the contents of teaching materials and instructions on how to use the aforesaid teaching materials based on religion-integrated neuroscience..
4. Content

The content page is the page that contains the learning content to be taught. This content page begins with “*Ayo Mengaji*” (Let’s Recite the Qur’an) so students can know the importance of writing in the Qur’an. Chapters following this are equipped with contextual aspects.



Figure 3. Content page

5. Summary

The summary of materials in this teaching material is located on the final page of the learning material. This summary is optimized for the prefrontal cortex, an important part of thinking, thought processing, and memory storage.



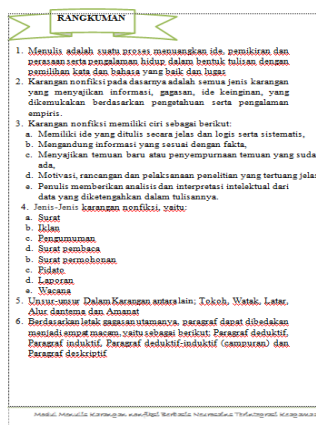


Figure 4. Summary page

6. Exercise

Exercise in this teaching material aims to hone and evaluate students' understanding of the material being presented in the teaching material. This exercise is placed at the end after of the summary.

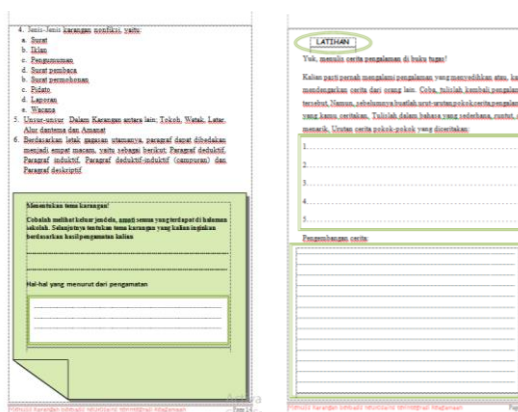


Figure 5. Exercise page

One of the main criteria for determining the usability of teaching material is the validation of experts. Validation data from those three validators are then analyzed by also considering inputs, comments, and suggestions from the validator. The results of the analysis were then used as guidelines to revise the product or the instrument. It is then based on a validity score sheet used by the validator can the teaching material be validated using Aiken's statistic formula as the following:

a) Results of observation instrument validity

Recapitulation of the validity of the observation instrument from three validators can

explain that the V (Aiken's) value is obtained from the formula  $V = \frac{8}{[3(4-1)]} = 0,89$  as

well as for the construction team and so on. Aikens coefficient value ranges between 0 to 1, and the value of 1 can be considered valid. It can be concluded that such value can be considered as being very valid.

b) The validity of teaching material through religion-integrated neuroscience

Recapitulation of the validity of teaching materials from three validators can explain that the V (Aiken's) value is obtained from the formula  $V = \frac{5}{[3(4-1)]} = 0,55$  as well as for construction team and so on. Aikens coefficient value ranges between 0 to 1, and the value of 1 can be considered valid. It can be concluded that such value can be considered as being valid.

c) Results of questionnaire validity of students' response to learning to write essays teaching materials through religion-integrated neuroscience.

Recapitulation of the validity of teaching materials from three validators can explain that the V (Aiken's) value is obtained from the formula  $V = \frac{6}{[3(4-1)]} = 0,67$  as well as for construction team and so on. Aikens coefficient value ranges between 0 to 1, and the value of 1 can be considered valid. It can be concluded that such value can be considered as being valid.

*The practicality of Writing Learning Material based on Religion-Integrated Neuroscience in Grade 5 Students in SD Negeri 1 Lalebbata*

The result of practicality towards the development of teaching materials based on religion-integrated neuroscience in grade 5 students, amounting to 25 students, can be seen in the following table:

*Table 1. Practicality questionnaire result data*

No.	Indicators Assessed	Score
1.	Learning material is easy to use	84
2.	Learning material can assist students in learning	81
3.	Learning material uses simple and easy to understand the language	82
4.	Learning material makes students more active in learning	80
5.	Learning material based on stories ease students in learning	90

No.	Indicators Assessed	Score
6.	This learning material is interesting	86
7.	Pictures and images used in this learning material makes the student more enthusiastic in learning	83
8.	This learning material prevents students from getting bored	81
9.	The language used in this learning material is easy to understand	75
10.	Delivery of the material of writing based on religion-integrated neuroscience	82
<b>Total</b>		824
<b>Average</b>		3.3

In the table, the aspect proposed to practitioners of 25 students of class 5A with N = 10 obtain an average of 3.3, falling within the average of 3.25 and 4.00 in the category of very good.

## Discussion

### *Validity Design of Writing Learning Material based on Valid Religion-Integrated Neuroscience*

Teaching material and instrument is used in the author's field to validate it, so that teaching material and instrument can be used following its intended purpose of the study. In Azwar's opinion in Widodo (2006), the definition of validity test can be started by looking at it etymologically, where validity came from the term validity meaning to which extent the accuracy of determination of a measuring instrument in its use. A test or measuring instrument can be considered having a high validity when it can do its function in measuring or when it can give results following the purpose of its use. Tests that produce data that are not relevant to the measurement objectives are said to be tests that have low validity (Widodo, 2006). Therefore, the author validates teaching materials and instruments so that everything is following its function and purpose.

The validity level of the developed teaching material is paramount. Teaching material can be said as valid when it fulfills the criteria of validity test that is done before being assessed to determine the objectives desired. Thus, we can say that the validity of

the testing instrument depends on its capability in achieving the desired validation purpose accurately (Diponegoro, 2005).

*The practicality of Writing Teaching Material based on Religion-Integrated Neuroscience in Grade 5 Students in SD Negeri 1 Lalebbata*

The application of this teaching material is made as practical as possible to facilitate students in the learning process. Daryanto & Dwicahyon (2014) suggested that the use of modules is helpful for the following matters: (1) to increase the effectivity of learning without regular direct face-to-face teaching due to geographical, socio-economical, and other conditions of the society, (2) to set learning time that suits the needs and development of the students, (3) to know students' achievement of the competencies gradually through criteria set in the module.

### **Conclusion**

The design of Indonesian learning materials in essay writing based on religion-integrated neuroscience is said to be valid by validating it through three validators with several revisions so it can be determined to be valid, while the practicality of the writing teaching materials based on religion-integrated neuroscience using questionnaire response from 25 students earned an average of 3.3, within the range of 3.25 to 4.00. Therefore, it can be said that the teaching material is very well-made

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