

**Development of Science Learning Material Based on Scientific Literacy on Plants
Tissues' Structure and Function Topic**

Nor'ainah 1*, Yudha Irhasyuarna 1, Mella Mutika Sari¹

Science Education Study Program, Faculty of Teacher Training and Education, Lambung
Mangkurat University Jl. Brigadier General H. Hasan Basri, Banjarmasin, South Kalimantan,
70123

*Email: aenahangely@gmail.com

ABSTRACT

Scientific literacy is knowledge and skills in the scientific field in order to have the ability to identify problems, gain new insights, explain scientific phenomena, make conclusions according to reality, master the uniqueness of science, be aware of science and technology that shape the natural environment, and be willing to participate and care with problems related to science. The Science module is teaching material in science lessons that can make it easier to achieve learning objectives. Teaching materials used in the learning process have an important role in determining the success of learning. Teaching materials used in SMP/MTs tend not to involve students in exploring and applying concepts, causing them to be less active and creative in the learning process. Therefore, researchers through this research developed a scientific literacy-based teaching material related to the structure and function of plant tissue in natural science lessons. This study aims to explain the feasibility of scientific literacy-based teaching materials in the form of modules, their uses, and their practicality. This research is classified as development research. The development model used is the 4D model (Define, Design, Development, and Dissemination). The results showed that the validity of the module obtained a percentage of 90% with an average of 3.60 valid criteria without revision. Then the results of the module scientific literacy validity obtained a percentage of 80% with an average of 3.37 valid criteria. So it can be concluded that the modules used as science teaching materials based on scientific literacy on the structure and function of plant tissues are valid and suitable for use as teaching materials.

Keywords: scientific literacy; learning module, teaching materials.

ABSTRAK

Literasi sains merupakan suatu pengetahuan dan keterampilan pada bidang ilmiah agar memiliki kemampuan untuk mengidentifikasi permasalahan, mendapatkan wawasan baru, menjelaskan gejala ilmiah, membuat conclusion sesuai kenyataan, menguasai keunikan sains, kesadaran terhadap sains dan teknologi yang membentuk lingkungan alam, serta bersedia untuk berpartisipasi dan peduli dengan problematika yang berkaitan sains. Modul IPA ialah bahan ajar dalam pelajaran IPA yang dapat memudahkan untuk mencapai tujuan pembelajaran. Bahan ajar yang digunakan dalam proses pembelajaran memiliki peranan penting dalam menentukan keberhasilan pembelajaran. Bahan ajar yang digunakan di SMP/MTs

cenderung belum melibatkan peserta didik dalam menggali dan mengaplikasikan konsep sehingga menyebabkan mereka kurang aktif dan kreatif dalam proses pembelajaran. Oleh sebab itu, peneliti melalui penelitian ini mengembangkan suatu bahan ajar berbasis literasi sains terkait materi struktur dan fungsi jaringan tumbuhan pada pelajaran IPA. Penelitian ini memiliki tujuan untuk menerangkan kelayakan bahan ajar berbasis literasi sains berupa modul, kegunaannya, dan kepraktisannya. Penelitian ini tergolong sebagai penelitian pengembangan. Model pengembangan yang digunakan ialah model 4D (Define, Design, development, dan Dissemination). Hasil penelitian menunjukkan bahwa validitas modul memperoleh persentase sebesar 90% dengan rata-rata 3,60 kriteria valid tanpa revisi. Kemudian hasil validitas literasi sains modul memperoleh persentase sebesar 80% dengan rata-rata 3,37 kriteria valid. Sehingga dapat disimpulkan bahwa modul yang digunakan sebagai bahan ajar IPA berbasis literasi sains pada materi struktur dan fungsi jaringan tumbuhan valid dan layak digunakan sebagai bahan ajar.

Kata kunci: literasi sains; modul pembelajaran; bahan ajar.

BACKGROUND

The world of education must always be ready to respond to increasingly rapid technological advances. The world of education must always innovate in order to be able to produce students who are qualified, useful, and ready to face competition in the community. Quality learners are created from a quality educational process. This is in accordance with what is stated in Law No. 20 of 2003 Article 1 related to the National Education System that education is an effort that is carried out and prepared carefully so that the learning process can take place effectively and efficiently. This is done so that students are able to act actively in developing their hidden potential. The development of self-potential by participants in the learning process can foster spirituality, personality, intelligence, and skills that are useful for students, both in the school environment and the community.

In the learning process, literacy is very important for learners. This is because proficiency in literacy can affect the success of learning and the lives of students. Good literacy skills will help students understand various learning sources, both oral, written, and visual sources (Angraini, 2014). In line with this, the Ministry of Education and Culture (2017) also believes that literacy, especially scientific literacy, is needed by students. This is because science literacy can produce students who are able to think critically, able to solve problems in creative ways, able to cooperate with others, and able to communicate better.

Not only literacy ability, the quality of students is also determined by the ability of educators. Teachers, as educators, are required to develop their abilities and skills professionally in order to achieve the learning goals that have been set. Teachers are encouraged to think creatively in finding and using learning materials to achieve learning objectives. Teachers do not always have to focus on teaching materials in the form of textbooks and student worksheets that have been provided by the school. Teachers must be able to use everything to be used as teaching material in order to be able to attract the interest of students so that the learning process that occurs is fun. Teaching materials are a set of recommendations that contain material, methods, limitations, and evaluations, and are arranged in a structured and attractive manner in order to achieve the expected goals, namely achieving competencies or subcompetencies with all their complexity (Novitasari, et al, 2016).

One type of teaching material that can be used by educators in the learning process is modules. Module is a type of printed teaching material made by certain parties with the aim of making it easier for students to learn independently. This is because the module is equipped with certain instructions so that learning activities can be carried out without the presence of educators. This is in accordance with what was conveyed by Daryanto (2013) that modules are learning materials that are made in a structured manner to make it easier for readers to understand the material independently.

Modules have diverse functions. Prastowo (2014) revealed that modules have various functions, namely as teaching materials that are independent or do not need the guidance of educators. Modules can also be used to substitute teachers. In addition, modules can also be used as a tool to evaluate the ability of students and a reference source for students. A good module is a module that has characteristics. Daryanto (2013) explained that a good module must contain five characteristics, namely making it easier for students to learn independently, containing all predetermined subject matter, modules do not have to contain different subject matter, modules must be able to adjust the development of science, and modules must contain instructions or instructions that can facilitate users.

The use of modules as teaching materials is considered more beneficial for students because it can help students understand the material. In addition, the use of modules can also be used as a benchmark for the abilities possessed by students. The use of modules also helps students in adding their references so that they have diverse information. Contextual material can support the ability of students to better understand and apply concepts in solving problems (Suprawoto, 2009). However, the material on the structure and function of plant tissue in everyday life taught to grade 8 students is one of the abstract materials. That is, learners can only imagine and guess, but cannot see the network directly. Based on the background that has been described, the author wants to conduct research with the title "Development of Science Literacy-Based Science Teaching Materials on Plant Tissue Structure and Function Materials".

RESEARCH METHODS

This research is development research or also known as R&D (*Research and Development*). This research applies the development model developed by Thiagarajan, namely the *Four-D* (4D) development model. Thiagarajan (in Sugiyono, 2015) suggests that the 4D development model is divided into four stages, namely *define*, *design*, *development*, and *dissemination*. At the defining stage (*define*), researchers determine the product to be developed as teaching material, along with its specifications. At this stage, researchers will determine and define science learning needs by considering various analyses, namely curriculum analysis, analysis of student characteristics, material analysis, and formulating learning objectives. At the design stage, researchers design products that have been set at the beginning. At this stage, the product to be designed by the researcher is a module based on science literacy on the structure and function of plant tissues. At the development stage, researchers develop designs into real products and test the validity of the product repeatedly so that the resulting product is in accordance with predetermined specifications. At this stage, researchers have produced a designed product, namely the Plant Tissue Structure and Function Science Module. The product is a real product that is ready to be used by others. The product has also passed validation by relevant experts. At the *dissemination* stage, researchers publish products that have been tested so that they can be used by others. At this stage, researchers will disseminate products that have been made so that they can be useful for others. However, in this study, the product was not deployed. This is because the manufacture of these products coincided with the emergence of the Covid-19 outbreak that hit.

The data analysis is carried out by validating products that have been made based on certain criteria. Validity is a measure used to indicate the level of validity or validity of a product based on the accuracy or accuracy of the product used. A valid product is a product whose measurement method is in accordance with that size. Arikunto (in Djamas, 2015) suggests that a test has high validity if the results match the criteria. In this study, validation was carried out by three validators by referring to the validation questionnaire that had been determined. The results of validation by validators will be analyzed to determine the level of validity of the product that has been developed. The preparation of the questionnaire is guided by the opinion of Sugiyono (2012) which states that the questionnaire is prepared based on a scale of 1-4 with the following weight details.

Table 1. Weight of Assessment of Validity of Teaching Materials

Valuation	Assessment Weights
Excellent	4
Good	3
Not good	2
Bad	1

The criteria for the validity of teaching materials can be stated from the suitability of the preparation of teaching materials with theories expressed in terms of valid (feasible) or invalid (not feasible). The components that need to be considered in the validation of teaching materials are the format of teaching materials, language, teaching material content, presentation, benefits or uses, and aspects of science literacy. The validation value is determined based on the following formula developed by Hamdi, et al. (2013).

$$\text{Percentage of validity} = \frac{\text{Earned score}}{\text{Ideal score}} \times 100\%$$

Whether or not the developed module is valid is determined based on the match of the validation results that have been calculated with the equation above. Then, it will be matched with the validity criteria that have been proposed by Widoyoko (2016). The criteria for the validity of these modules can be seen in the following table.

Table 2. Assessment Category Validation of Teaching Materials

Score Interval	Category
3.25 < x ≤ 4.00	Excellent
2.50 < x ≤ 3.25	Good
1.75 < x ≤ 2.50	Bad
1.00 < x ≤ 1.75	Very unkind

Whether or not teaching materials are determined based on the match of the validation results with the validity criteria that have been stated by Akbar (2017). The criteria for the validity of these teaching materials can be seen in the table below.

Table 3. Criteria for Validity of Teaching Materials

Validity Percentage Interval	Validity Criteria
85,01% - 100.00%	Valid without revision
70,01% - 85.00%	Valid with minor revisions
50,01% - 70.00%	Valid with major revisions
01,00% - 50.00%	Invalid

RESULTS AND DISCUSSION

The teaching material developed in this study is a science literacy-based science module on the structure and function of tissue in plants. The modules developed in this study use a guided inquiry learning model. The topics used as material in this module are about the layers of the earth and disasters for junior high school grade VIII even semester. The selection of this topic has been adjusted to the characteristics of the material and the characteristics of students.

a. Validation Results of Teaching Materials

The modules developed in this study have various specifications, such as front cover, foreword, table of contents instructions for using the module, module composition, concept map, content standards, materials, summaries, formative tests, references, and glossaries. Then, the module is reviewed by the three material and media expert validators. Module validation is carried out as a condition for the eligibility of modules that have been developed. Validation of teaching materials covers several aspects, namely format, language, content, presentation, and benefits / uses of modules. The following are the validation results of validators related to the use of modules as teaching materials.

Table 4. Validation Results of Teaching Materials

No.	Review Aspect	Total Aspect Score	Average Aspect	Validity (%)	Validity Categories
1.	Format of teaching materials	97	3.59	90%	Very valid
2.	Language	195	3.61	90%	Very valid
3.	Content of teaching materials	96	3.55	88%	Very valid
4.	Serving	206	3.61	90%	Very valid
5.	Benefits/uses	22	3.67	92%	Very valid
Average		-	3.60	-	Excellent
Overall Validity Percentage		-	-	90%	Valid without revision

Table 4. The above shows that the validation results of teaching materials reviewed based on the format of teaching materials have an average value of 3.59 and validity of 90%. This indicates that the format of the teaching materials is classified as very good and valid without revision. The format of teaching materials in the table, including attractive covers, module components are met, the numbering system is clear and consistent, the type and size of the letters used have been adjusted, the design of the space and layout are well arranged, the text has been adjusted to the size and color so as not to be boring, the image illustrations used can clarify the material, image captions on the image illustrations are placed at the bottom with a smaller font size, The summary of the material is in accordance with the material contained in the module, and the size of the module is also adjusted to students so that it can provide

convenience in storage, as well as good print quality. The following is a snippet of teaching materials in terms of format.



Figure 1. Teaching materials that contain aspects of the format of teaching materials

Table 4. The above shows that the results of the validation of teaching materials in terms of language aspects obtained an average score of 3.61 and validity of 90%. This indicates that the language aspect of the teaching material is classified as very good and valid without revision. The categories indicate that the language aspects in this module are clear and correspond to enhanced spelling. In addition, the language used is also in accordance with the level of emotional maturity of junior high school students. The language used is communicative by presenting dialogue and interactive to arouse a sense of enthusiasm for learning. Straightforward language preparation can prevent misinterpretation. Mudlofir (2012) argues that the use of communicative and semi-formal language in teaching materials can make students interested in reading and not confused in understanding a material. The following is a snippet of the language used in the teaching materials.

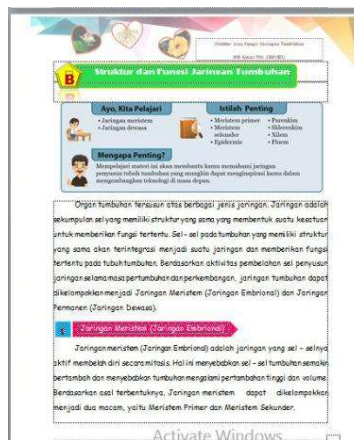


Figure 2. Language in teaching materials

Table 4. The above shows that the results of the validation of teaching materials reviewed based on aspects of the content get an average value of 3.55 and validity of 88%. This indicates that the content in the teaching materials is classified as very good and valid with minor

revisions. The assessment of the content in the teaching materials includes criteria for material coverage, material accuracy, and up-to-date. The scope of material is divided into two types, namely the breadth of matter and the depth of matter. The breadth of material in this module has been adjusted to the achievement of basic competencies. The depth of the material has contained details of the concepts contained in the basic competencies that must be learned by students. Material accuracy includes several parts, namely the accuracy of facts, concepts, principles / laws, theories, terms, symbols, and units. The parts included in the accuracy of the material have been adjusted to the basic competencies and learning objectives. Sophistication is defined as conformity with the development of science and the latest / masturbation. Modules should have high adaptive power, not only in the development of science and technology, but also the times so that they are flexible to use (Ashhar, 2012). In this module, features have been adjusted to present interesting features and discuss new/hotly discussed issues according to the material studied. The following is a snippet of the content in the teaching materials.



Figure 3. Content of teaching materials

Table 4. The above shows that the validation results of teaching materials reviewed based on aspects of presentation get an average score of 3.61 and validity of 90%. This indicates that the presentation aspect of the teaching material is classified as very good and valid without revision. The presentation aspect of this module assessment consists of categories of presentation techniques, concept sequence, material presentation support, and learning presentation. The category of presentation techniques includes consistent systematics of presentation in chapters / subchapters and the logic of presentation. The systematics arranged in this module contains the background, content, and cover. The category of concept continuity includes relationships between facts, between concepts, between principles, between theories, balance between chapters and balance between subchapters in chapters, suitability / accuracy between illustrations of material in chapters, presentation of tables of figures, and appendices that must be accompanied by current references and identities of tables, figures and appendices. The categories of learning presentation in this module are presented according to the scientific learning model. That is, learner-centered, learner involvement, intertwining interactive communication, suitability with subject character, ability to stimulate the depth of thinking of students, foster curiosity, and provide challenges to learn further. Hosnan (2014) said that the scientific learning model can provide understanding to students that material or information can be sourced from anywhere and anytime so that it does not depend on unidirectional

information from the teacher. The following is a snippet of the presentation aspect in teaching materials.

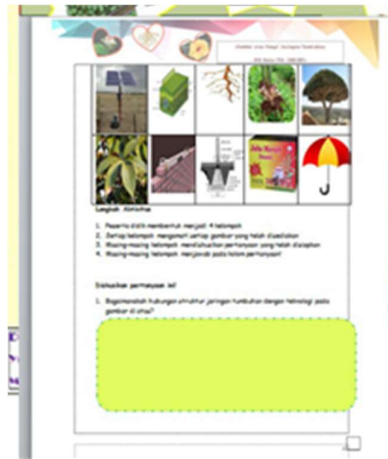


Figure 4. Aspects of presentation contained in teaching materials

Table 4. The above shows that the validation results reviewed based on aspects of benefit or usefulness resulted in an average value of 3.67 and validity of 92%. This indicates that the aspects of the benefits or uses of teaching materials are classified as very good and valid without revision. The level of benefit or usefulness of teaching materials is assessed based on two forms, namely teacher guidelines in learning and student guidelines in independent learning.

Table 4. The above shows that teaching materials that have been developed and assessed thoroughly according to their aspects have a total validity percentage of 90%. Based on predetermined validity criteria, a 90% validity percentage indicates that the teaching material is included in the valid category without revision. In addition, the table also shows the average value of all aspects is 3.60. Based on the criteria for the validity of teaching materials that have been determined, the average of all aspects of 3.60 symbolizes that the teaching materials are in the very good category. These results are in accordance with what was conveyed by Arikunto (2013) that valid or valid instruments are instruments with a high level of validity, while instruments with low validity are invalid instruments. Thus, the results of this validity show that the developed module is feasible to be used in supporting the learning process and can be utilized by all parties, both teachers and students. However, teaching materials that have been validated by the validators will still go through re-improvements in accordance with the recommendations given by the validators. This is done so that the teaching materials that have been developed can become better teaching materials.

b. Results of Validation of Science Literacy Aspects in Teaching Materials

The results of the validation of teaching materials developed aim to determine aspects of scientific literacy in the structure and function of plant tissues. Chiapetta (1991) mentions four aspects that are indispensable for analyzing and developing science literacy-based teaching materials. The four aspects are science as a body of knowledge, science as a way to investigate, science as a way to think, and the interaction of science and technology with society. The results of the validation of teaching materials by the three validators related to aspects of science literacy can be seen in the following table.

Table 5. Validation Results related to Aspects of Science Literacy in Teaching Materials

No.	Review Aspect	Total Aspect Score	Average Aspect	Validity (%)	Validity Categories
1.	Science as the body of knowledge	33	3.67	91%	Very valid
2.	Science as a way to investigate	22	3.67	91%	Very valid
3.	Science as a way to think	22	4.00	100%	Very valid
4.	The interaction of science, technology and society	11	3.67	90%	Very valid
Average		-	3.37	-	Good
Overall Validity Percentage		-	-	84%	Valid with minor revisions

Table 5. The above shows that the results of validation of science literacy-based teaching materials based on aspects of science as the body of knowledge get an average score of 3.67 and validity of 91%. This indicates that the aspect of science as a body of knowledge in science literacy-based teaching materials is classified as very good and valid without revision. The aspect of science as a body of knowledge includes three dimensions, namely the presentation of facts, the presentation of concepts, and the presentation of principles in accordance with the learning material. An example of the fact presented in this module is that the atmosphere envelops the earth up to hundreds of kilometers above the earth's surface. An example of the concept presented in this module in the form of air pressure is the pressure that exists in a place caused by the weight of air pulled by gravity to the surface of the earth. An example of the principle presented in this module is that the more air, the higher the density resulting in a large compressive force. The following is a snippet of aspects of science as a body of knowledge in science literacy-based teaching materials.

Table 5. The above shows that the results of science literacy-based validation based on aspects of science as a way to investigate obtained an average score of 3.67 and validation of 91%. This indicates that aspects of science as a way to investigate in science literacy-based teaching materials are classified as very good and valid without revision. The aspect of science as a way to investigate is assessed through two things, namely evaluation questions and competency tests. The evaluation questions contain questions related to the use of material in modules that are adjusted to aspects of student knowledge and are arranged based on indicators of science literacy. Unlike the case with competency tests that involve students directly in experiments or thinking activities through several supporting features contained in the module. Features that support learning have a variety, including the let's solve feature and the let's discuss feature. Both of these features have a function as a way to train students in collecting data and training in observation to find facts and draw conclusions independently or in groups. The following is a snippet of aspects of science as a way to investigate contained in science literacy-based teaching materials.

Pacar Air						
Kangkung						
Jahe/ Kunyit/ Lengkuas						
Kentang						
Wortel						
Singkong						
Kaktus						

Diskusikan!

- Berdasarkan pengamatanmu, jahe/ kunyit/ lengkuas, kentang, wortel, dan singkong. Termasuk ke dalam batang, akar, atau daun tanaman tersebut? Kemukakan alasanmu!
- Berdasarkan hasil pengamatanmu, apakah tanaman kaktus/ buah naga memiliki daun? Dimanakah tempat fotosintesis tanaman kaktus?

Figure 6. Science as a way to investigate

Table 5. The above shows that the results of science literacy-based validation based on aspects of science as a way to think resulted in an average score of 4.00 and 100% validation. This indicates that aspects of science as a way to think in science literacy-based teaching materials are classified as very good and valid without revision. The application of aspects of science as a way to think in this module uses two supporting features, namely the science figure feature and the let's do it feature. The feature of a science figure is a supporting feature whose use can be through the image of a science figure conducting an experiment. The let's do feature is a supporting feature that can be applied through discussion rooms about facts and evidence related to the material presented. Both features contain simple experiment guides or activities to help understand concepts carried out in groups under the guidance of educators. Here's an excerpt that illustrates aspects of science as a way to think in science literacy-based teaching materials.

Akar Tunggang **Akar Serabut**

Sumber: www.balibali.com

1. Serabut
Tumbuhan monokotil seperti padi, jagung dan rumput memiliki sistem perakaran serabut.

2. Tunggang
Tumbuhan dikotil seperti kacang tanah dan mangga memiliki sistem perakaran tunggang.

Akar memiliki fungsi untuk menambatkan tubuh tumbuhan pada tanah atau medium tumbuhnya, menyerap air dan mineral dalam tanah atau pada medium tumbuhnya. Pada beberapa tumbuhan, akar mengalami modifikasi sehingga dapat memiliki fungsi untuk menyimpan cadangan makanan misalnya pada singkong dan bengkuang serta berfungsi juga untuk menyerap oksigen atau untuk bernapas, misalnya pada tumbuhan bakau.

Figure 7. Science as a way to think

Table 5. The above shows that the results of science literacy-based validation based on aspects of the interaction of science, technology and society get an average score of 3.67 and validation of 90%. This indicates that aspects of the interaction of science, technology and society in science literacy-based teaching materials are classified as very good and valid without revision. The interaction aspect of science, technology and society contains an explanation of the usefulness of science and technology for society through the information feature of science children. In his book, Tobin (2015) states that science and technology are two things that cannot be separated. That is, the ability to produce and apply scientific knowledge, recognize problems, and draw conclusions based on evidence must always keep abreast of technological developments. Fu'adah, et al. (2017) said that aspects of the interaction of science, technology and society are least liked by students. This is due to a lack of understanding of the application of science and technology in everyday life. In fact, without good scientific knowledge, people will become weak users of technology and are unable to apply all the technological sophistication available in supporting life (Ibrahim and Aspar, 2011). The following is a snippet that illustrates aspects of the interaction of science, technology and society in science literacy-based teaching materials.



Figure 8. The interaction of science, technology and society

Table 5. above shows that the results of validation tests related to aspects of science literacy in the science module that have been developed have a total validity percentage of 84%. Based on predetermined validity criteria, a validity percentage of 84% indicates that the scientific literacy contained in teaching materials is included in the valid category with minor revisions. In addition, the table also shows the average value of all aspects is 3.37. Based on the criteria for the validity of teaching materials that have been determined, the average of all aspects of 3.37 indicates that the teaching materials are included in the good category. These results are in accordance with what was conveyed by Arikunto (2013) that valid or valid instruments are instruments with a high level of validity, while instruments with low validity are invalid instruments. Thus, the results of this validity show that the developed module is feasible to be used in supporting the learning process and can be utilized by all parties, both teachers and students. However, teaching materials that have been validated by the validators

will still go through re-improvements in accordance with the recommendations given by the validators. This is done so that the teaching materials that have been developed can become better teaching materials.

CONCLUSION

Based on the results of research and discussion on "Development of Science Literacy-Based Teaching Materials on Plant Tissue Structure and Function Materials", it can be concluded that this teaching material is suitable to be used as a guide by educators and students in learning in accordance with the results of validation by three validators. The results of the assessment of the validity of teaching materials consisting of 5 aspects obtained an overall percentage of 90% with valid categories without revision. The results of the science literacy assessment consisting of 4 aspects obtained an overall percentage of 84% with a valid category with minor revisions. Based on the results of the validity of these experts, it can be concluded that the module developed has met the feasibility standards and is valid so that it can be used and used as teaching material by all parties, both educators and students.

REFERENCES

- Akbar, S. (2013). *Learning Device Instruments*. Bandung: PT. Juvenile Rosdakarya.
- Angraini, G. (2014). Analysis of Science Literacy Ability of Class X High School Students in Solok City. *Proceedings of the Mathematics and Sciences Forum 2014*, 169(1), 12-14.
- Arikunto, S. (2013). *Research Procedures a Practice Approach*. Jakarta: Rineka Cipta.
- Ashhar, S. (2012). *Creatively Develop Learning Media*. Jambi: Reference.
- Chiapetta. (1991). A Method to Quantify Major Themes of Scientific Literacy in Science Textbooks. *Journal of Research in Science Teaching*, 28(8), 713-725.
- Daryanto. (2013). *Structuring Modules: Materials for Preparation in Teaching*. Yogyakarta: Gava Media.
- Fu'adah, F., et al. (2017). Student's Science Literacy in the Aspect of Content Science. *Indonesian Journal of Science Education*, 6(1). 81-87.
- Hamdi, H. et al. (2013). Making Interactive Multimedia using Moodle on the Competence of Observing Natural Symptoms and Their Regularity for Learning for Class XI High School Students in Semester I. *Piillar of Physics Education*, 1(1), 55-62
- Hosnan. (2014). *Scientific and Contextual Approaches in 21st Century Learning*. Bogor: Ghalia Indonesia.
- Ibrahim, M. A. and Aspar, N. H. M. (2011). Science Literacy Level Among Level 4 Students of Aliran Agama School in Lower Perak District. *Journal of Science & Mathematics Educational*, 2(2), 102-112.
- Ministry of Education and Culture. (2017). <https://www.kemdikbud.go.id/blog/2017/02/sekolah-inklusi-dan-pembangunan-slb-support-education-inclusion> Retrieved 26 April 2017.
- Mudlofir, A. (2012). *Professional Education*. Jakarta: King Grafindo Persada.
- Novitasari, et al. (2016). Development of an Integrated Science Learning Module based on Science Literacy in Biology as a Source of Eye Senses in Class VIII Junior High School / MTs. *Journal of Science*. 1(5), 110-112.

- Novitasari, et al. (2016). Development of an Integrated Science Learning Module based on the Guided Inquiry of the Sun Theme as an Alternative Energy Source in Class VII SMP/MTs. *Journal of Inquiry* 5(1), 112-121.
- Prastowo, Andi. (2014). *Qualitative Research Methods in Research Design Perspective*. Jakarta: Ar-Ruzz Media.
- Sugiyono. (2012). *Quantitative Research Methods and R&D*. Bandung: Alfabeta.
- Sugiyono. (2015). *Research and Development Methods*. Bandung: Alfabeta.
- Suprawoto, N. A. (2009). <http://id.scribd.com/doc/165545502/Mengembangkan-Bahan-Ajar-dengan-Menyusun-Modul> accessed on January 2, 2019.
- Widoyoko, E. (2016). *Assessment of Learning Outcomes in Schools*. Yogyakarta: Learning Library.