



Development of Scientific Literacy-Based Modules on Class XI Regulation System Material at SMA Yayasan Nurul Islam Indonesia

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Abstrak

Penelitian ini bertujuan mengetahui respon peserta didik terhadap modul berbasis literasi sains pada materi sistem regulasi serta mengetahui kelayakan modul berbasis literasi sains pada materi sistem regulasi. Desain pengembangan produk menggunakan model Borg & Gall dengan delapan tahapan diantaranya, potensi dan masalah, pengumpulan data, desain produk, validasi produk, revisi produk, uji coba produk, revisi produk, dan produk final. Penelitian ini dilaksanakan dari bulan September-Desember 2021 dengan sampel penelitian 35 peserta didik kelas XI SMA Yayasan Nurul Islam Indonesia. Hasil penelitian ini menunjukkan bahwa presentase memenuhi kategori sangat layak dengan perolehan skor rata-rata pada setiap aspek yaitu 83% oleh ahli materi, 92% oleh ahli media, 92% oleh guru biologi dan 93% oleh peserta didik. Sehingga dapat disimpulkan bahwa bahan ajar modul berbasis literasi sains sangat layak digunakan untuk kegiatan belajar mengajar.

Kata Kunci: *Biologi, Pengembangan Bahan Ajar, Modul Sistem Regulasi*

Abstract

This study aims to determine students' responses to scientific literacy-based modules on regulatory system material and to determine the feasibility of scientific literacy-based modules on regulatory system material. The product development design uses the Borg & Gall model with eight stages including, potentials and problems, data collection, product design, product validation, product revision, product testing, product revision, and the final product. This research was carried out from September to December 2021 with a research sample of 35 students in class XI SMA Yayasan Nurul Islam Indonesia. The results of this study showed that the percentage met the very feasible category with the acquisition of an average score on each aspect, namely 83% by material experts, 92% by media experts, 92% by biology teachers and 93% by students. So it can be concluded that scientific literacy-based module teaching materials are very feasible to use for teaching and learning activities.

Keywords: *Biology, Development of Teaching Materials, Regulatory System Module*

Introduction

Education is a process of training and teaching primarily intended for children and youth both at school and on campus with the aim of providing knowledge and skills development (Ginting, 2018). In order to further complement the teaching materials used in learning activities and facilitate learning activities during the Covid-19 pandemic using electronic media, teaching materials are needed that make learning easier, such as modules which are teaching materials that can help students in the current learning period (Pertwi et al., 2022). Modules as teaching materials that can help students to learn independently have communicative language and are two-way in nature making it easier for students to learn subject matter (Ulfaa et al., 2022).

The results of observations or interviews in high school at the New Indonesia Nurul Islam Foundation Jl. Megawati No. 20 B (Jalan Halat Ujung) the constraints on teachers are the limited time spent delivering material on the regulatory system, in addition to the lack of interest and motivation of students. Some students are very enthusiastic about learning taking place but not a few are less enthusiastic, here the teacher only applies the lecture and discussion method therefore the learning process is less interesting because it uses a monotonous learning system. Making students less active and independent so that it affects their scientific literacy abilities.

Observations of researchers at the study site, teachers only use one textbook in conveying learning information in class, so it is necessary to have supporting teaching materials to complement the deficiencies in the textbook. It is important for the teacher to develop teaching materials, because developing teaching materials can help students. Students don't only have one textbook that can be used as teaching material, there can be more than one. This can help students develop their insights and make it easier for them to obtain information. Based on the description above, researchers are interested in developing module teaching materials based on scientific literacy with the hope that it can improve students' scientific literacy skills and all the desired goals can be achieved effectively and efficiently.

Development is to produce a product in the form of a biology module based on scientific

literacy on the material for the regulation system for class XI SMA which can develop modules and find out the responses of students to the modules, overcome problems and meet existing needs with teaching materials in the form of valid modules so that they can be used as supporting facilities and learning process infrastructure. The learning resource that can be used by the teacher is to use modules because the teaching material modules for independent learning are equipped with practice questions, answer keys and feedback which directs students to self-assess their abilities which involve students actively in learning (Nainggolan et al., 2021).

Previous research conducted by Azimi explained that science literacy is not only capable of carrying out or achieving these goals if learning is cognitive, effective and psychomotor but can also apply learning objectives to everyday life. Scientific literacy-based modules are very suitable for student learning. The ability to use scientific knowledge to identify problems and draw evidence in order to understand regulatory systems in the human body is very much related to scientific literacy. The regulatory system can be defined as a network structure, namely the nervous system, hormone system and sensory system (Permatasari & Anhar, 2019). Learning about regulatory system material is very important in learning biology. Likewise what is written in the Koran surah An-Nisa (4), verse 56 which means:

“Verily, those who disbelieve in Our signs, We will later admit them to hell. Whenever their skins are charred, We replace their skins with other skins, so that they may taste the punishment. Verily Allah is Mighty, Most Wise”. (QS An-Nisa 56)

The verse above which talks about the punishment that disbelievers will feel on the Day of Judgment confirms that this is done through the skin or nerve cells found on the surface of the skin. When the skin of the nerve cells has been scorched and lost its sensitivity, the disbelievers will feel the punishment, Allah will renew their skin.

Based on the problems above, it is necessary to conduct research entitled "Scientific Literacy-Based Module Development on Class XI Regulatory System Material in High School"

Method

This research is research in the form of research & development (R&D) (Syamsurizal & Ardianti, 2021). Products resulting from research or development can be in the form of learning aids, both in class, such as modules or other learning models (Khairi & Ikhsan, 2022). The research model refers to the Borgon Gall model

which is modified from Sugiono (Aristina & Isnaeni, 2022). The flow of this research design is based on previous research, namely Sugiono with motivation that is balanced with the objectives and conditions of the research, as shown in the following figure.

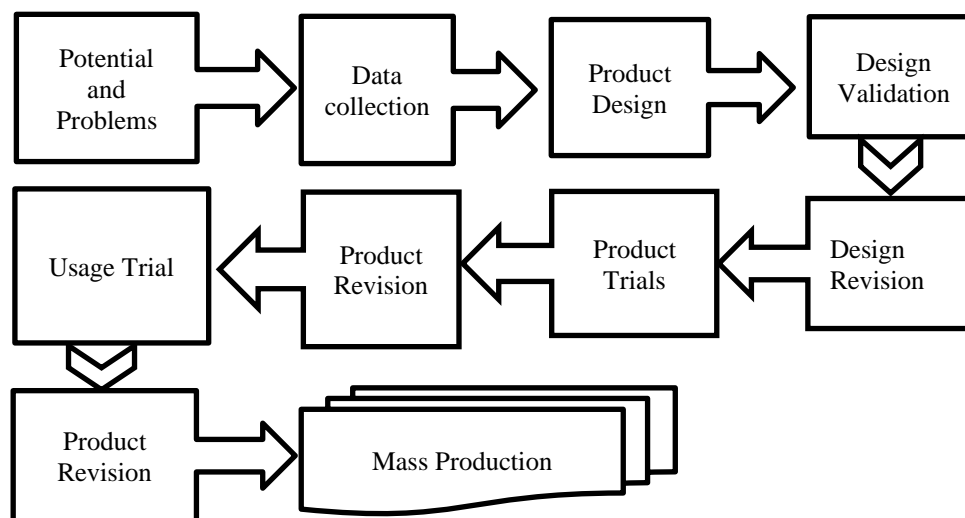


Figure 1 R&D research design

The introduction of modules as scientific literacy-based interactive learning media to students is carried out at Nurul Islam Indonesia High School. While the validation by expert validators was carried out at Campus II of UIN North Sumatra and Nurul Islam Indonesia High School. This research was conducted in November 2021.

Instruments are tools that function to facilitate the implementation of something. In this study the development of scientific literacy-based modules was organized into several research instruments used to assess modules. Based on the research objectives, several research instruments were designed and compiled, namely validation sheets and questionnaires. The validation sheet has a high quality level if the measuring instrument is able to measure precisely the object being measured with the actual facts or phenomena. Questionnaires can be in the form of closed or open questions/statements. This questionnaire is

used when evaluating or validating modules based on scientific literacy. Questionnaires were given to material experts, media experts, educators and students.

The data analysis technique uses a questionnaire instrument. The questionnaire used is Student Response Analysis (student response questionnaire and module feasibility analysis), material expert questionnaire, and module expert questionnaire.

Results and Discussion

Results

The following is the result of the initial module that was created:

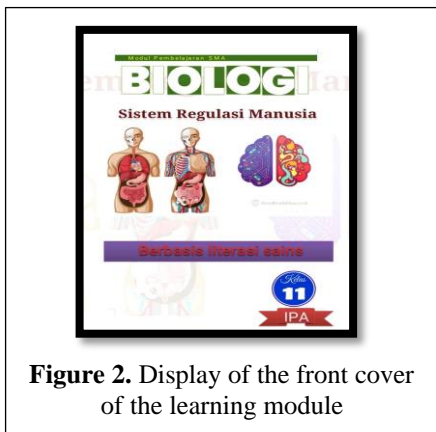


Figure 2. Display of the front cover of the learning module

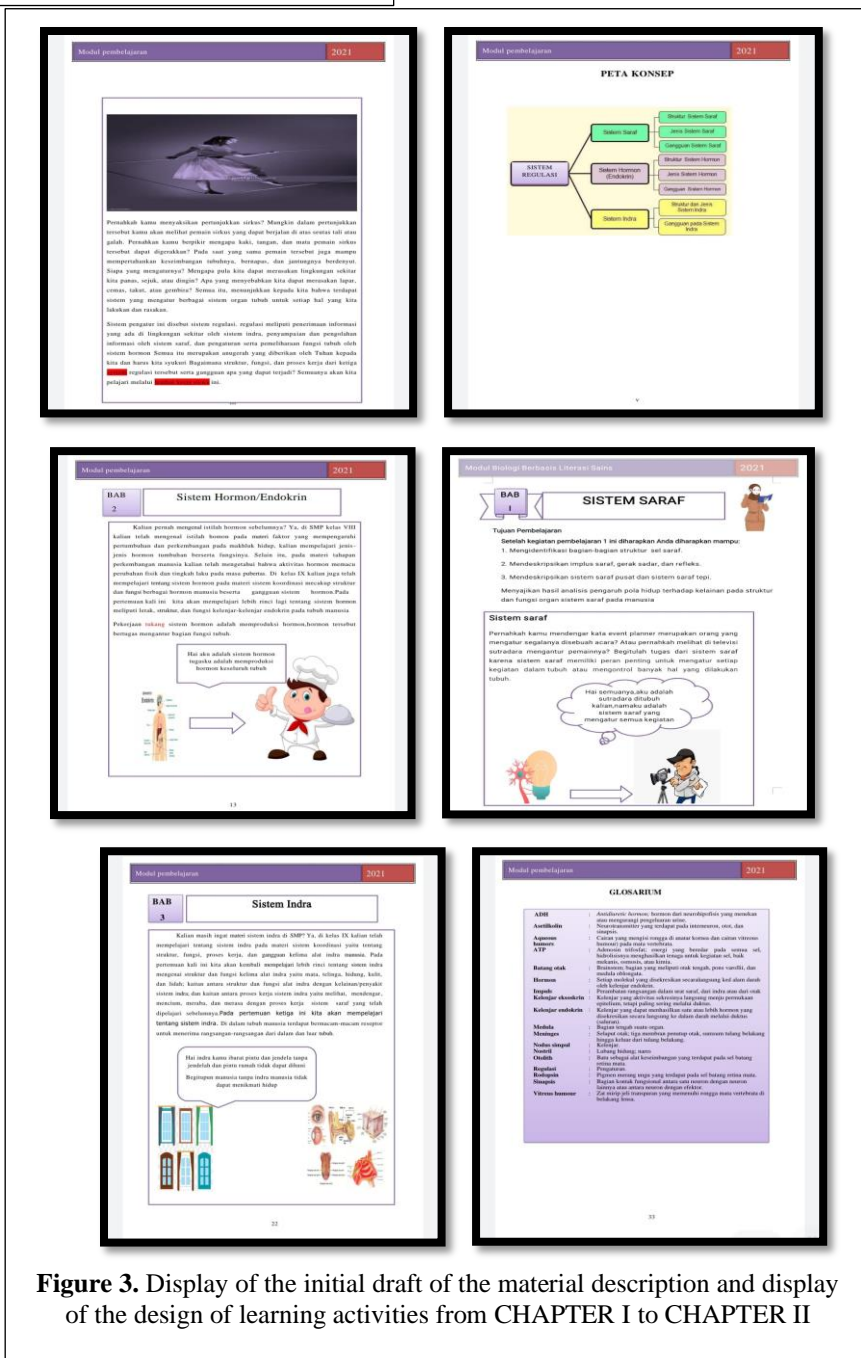


Figure 3. Display of the initial draft of the material description and display of the design of learning activities from CHAPTER I to CHAPTER II

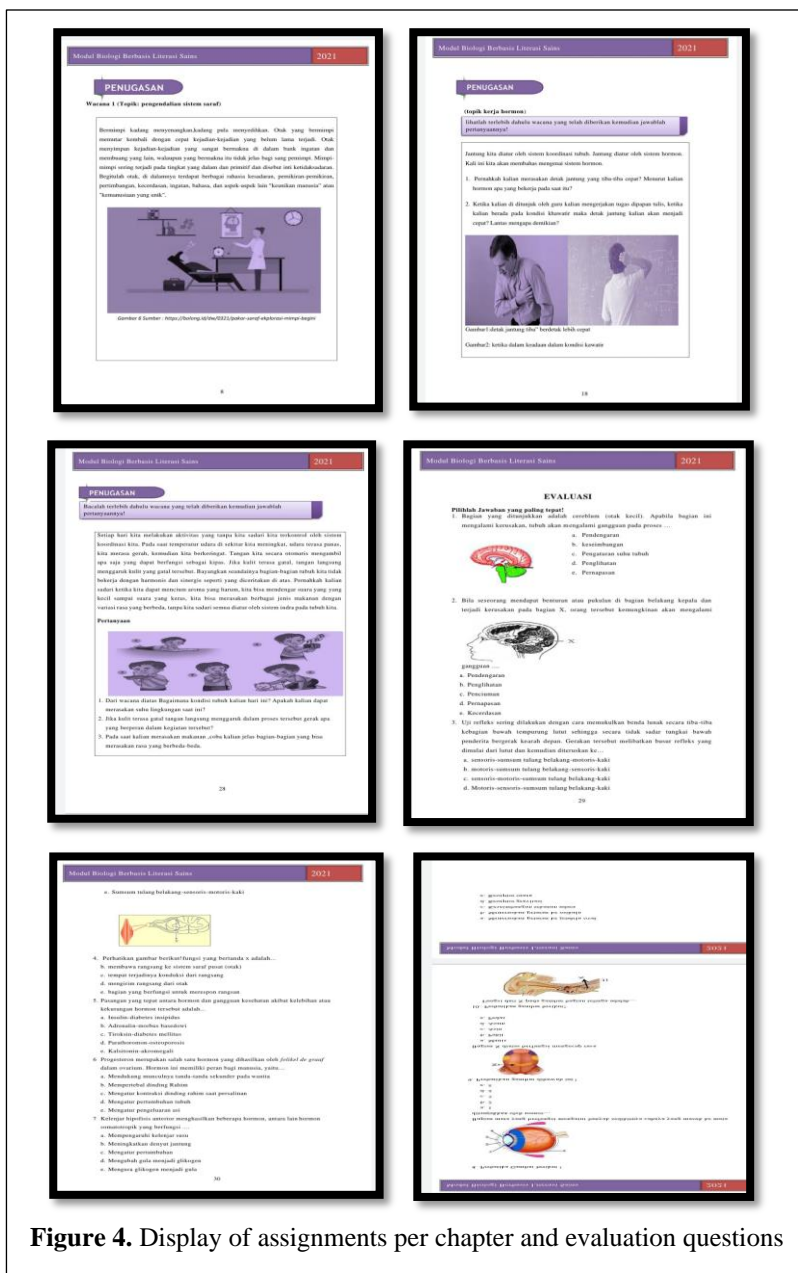


Figure 4. Display of assignments per chapter and evaluation questions

After the initial product was completed, the researcher carried out the initial process of designing research instruments for validation purposes. The results of the research instruments used by researchers can be seen in the attachment. If the design is complete, the next step is to carry out instrument validation with the instrument validator. M.Pd as the instrument and content framework validator. These aspects include aspects of clarity, aspects of content consistency, relevance aspects, content validity aspects,

no bias aspects, language certainty aspects. The following can be seen the tabulation of validation results from the questionnaire instrument can be seen in table 1.

Table 1. Tabulation of Research Results by Instrument Validators

No	Aspect	Total score	Max Score	Percentage (%)	Criteria
1	Clarity	14	15	93%	Very Worth it
2	Content accuracy	5	5	100%	Very Worth it
3	Relevance	9	10	90%	Very Worth it
4	Content validity	4	5	80%	Worthy
5	No Bias	4	5	80%	Worthy
6	Language Accuracy	13	15	87%	Very Worth it
Average				88%	Very Worth it

Source: Primary data that has been processed

From the data in table 1. it can be seen that the results of the assessment on the aspects that have been determined state that the results of the assessment of the instrument validator obtained a percentage of 88% with very feasible criteria based on this assessment, the questionnaire instrument can be used for research purposes from the assessment of the instrument validator.

Product Validation

At the product validation stage, an assessment was carried out by two validators, namely the material expert validator and the media expert validator which had been developed to see whether the module was feasible or not for use in the learning process, material expert validation was carried out by filling out a questionnaire. The validation was carried out by a biology lecturer, namely Mrs. Miza nina Adlini, M.Pd. The assessment consisted of three aspects of material suitability, content suitability aspects and content suitability aspects. While the media validation was carried out by the Uinsu biology lecturer validator, namely by Mr. M.Hasyim Ansari Berutu, M.Pd with an assessment consisting of 3 aspects, namely aspects of module form, aspects of module quality and aspects of module function. The following is a tabulation that

we can see the results of the assessment from material experts table 2. and table 3 media experts.

Table 2. Tabulation of validation results by material experts

No	Aspect	Total score	Maximum score	Presentase	Criteria
1	Material suitability	21	25	84%	Worthy
2	Content suitability	20	25	80%	Worthy
3	Language accuracy	21	25	84%	Worthy
Average				83%	Worthy

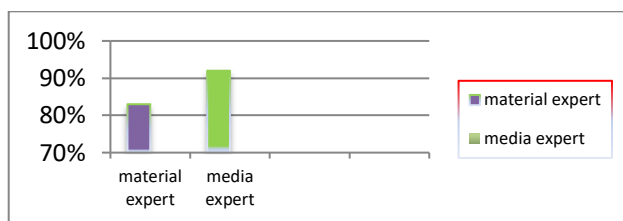
Source: Primary data that has been processed

Table 3. Tabulation of validation results by media experts

No	Aspect	Total score	Max Score	Percentage	Criteria
1	Module form	27	30	90%	Very worth it
2	Module quality	28	30	93%	Very worth it
3	Module function	13	15	93%	Very worth it
Average				92%	Very worth it

Source: Primary data that has been processed

From the data in tables 2. and 3. it can be seen the results of the assessment of the results of each aspect. From the results of the assessment by the material expert validator, a score of 83% was obtained with the appropriate criteria. And the results of the assessment of media experts 92% very decent. Based on the results of this assessment, the scientific literacy-based module teaching materials that have been developed are said to be suitable for use and can be tested on students after revising the module. The feasibility presentation can be seen from the assessment of the two experts which can also be seen in graph 5.



Graph 5. percentage of feasibility of modules by material experts and media experts

Product Revision

After the product has been validated by material experts and media experts, it can be seen that there are weaknesses in the product that has been developed. In this case improvements are made to reduce existing deficiencies. This revision was carried out according to suggestions by validation experts. The summary of these suggestions can be seen in table 4.

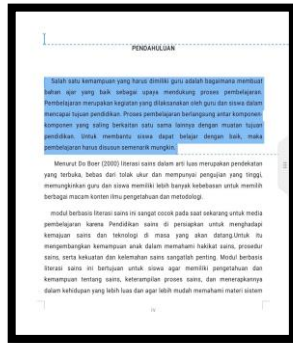
Table 4. Summary of suggestions from material experts and media experts

Validat or	Suggestion
Material Expert	<ol style="list-style-type: none"> 1. In the introduction to the module, it is not necessary to include the meaning of the module 2. In terms of nerves, you should use a color image and include a description of the image 3. Part 2 on the hormone system replaces the chef image with another as it is unrelated. 4. Any abnormalities in the senses should be marked on each sense, don't mix them together
Media expert	<ol style="list-style-type: none"> 1. The cover on the module should be colored so that it is interesting for students to see it 2. The attachment below, which information you know, is better tucked into the material section

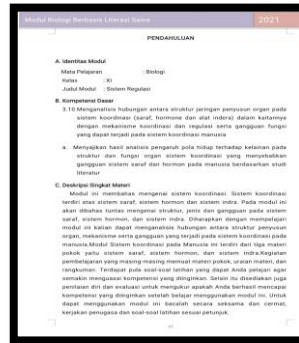
Data source: Primary that has been processed

Material Expert

- In the introduction to the module, it is not necessary to include the meaning of the module

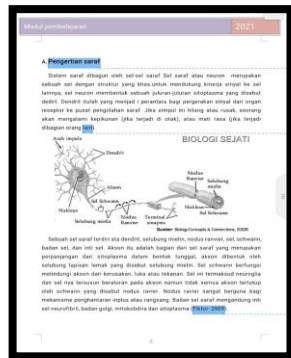


(Unrevised)

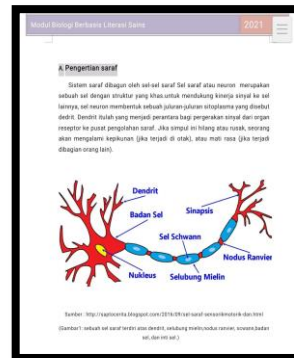


(Revised)

- In terms of nerves, you should use a color image and include a description of the image

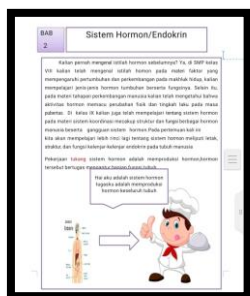


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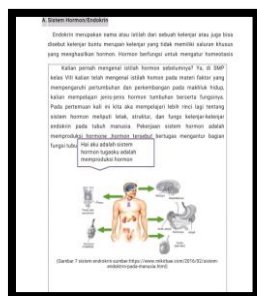


(Revised)

3. Section 2 on the hormone system replaces the chef image with another as it is unrelated

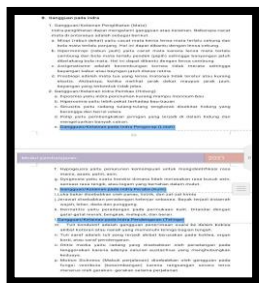


(Unrevised)

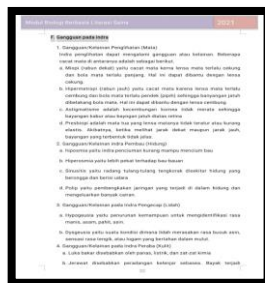


(Revised)

4. Any abnormalities in the senses should be marked with each sense, don't combine them

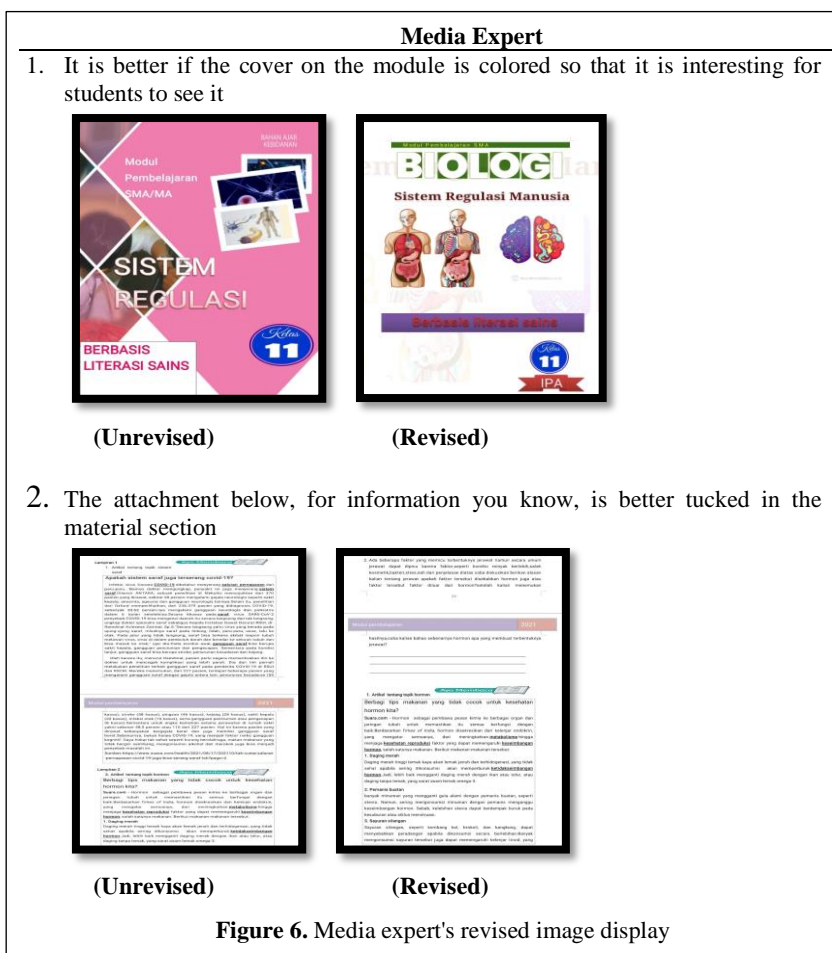


(Unrevised)



(Revised)

Figure 5. Display of material expert revision drawings



Product trials

After the product was revised, a product trial was carried out on the Biology teacher class XI SMA Yayasan Nurul Islam Indonesia, namely Mrs. Mega Riana, S.Pd to find out how she responded regarding the teaching materials that had been used. The results of the assessment can be seen in table 5.

Table 5. Tabulation of biology teachers

Source: Primary data that has been processed

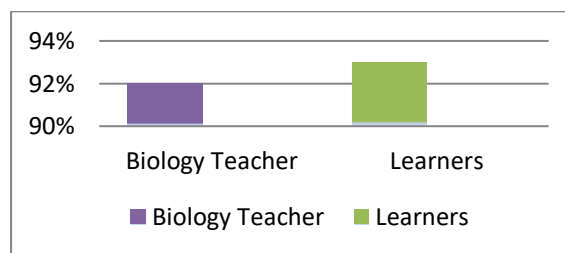
From the data in table 5. it can be seen in each of its aspects. The results of the biology teacher's assessment were a percentage of 92% with very feasible criteria for development. The teacher's response was very good towards the teaching material product in the form of

No	Aspect	Total score	Max Score	Percentage	Criteria
1	Learning	39	40	98%	Very Worth it
2	Eligibility of Presentation	32	35	91%	Very Worth it
3	Language	18	20	90%	Very Worth it
4	Appearance	36	40	90%	Very Worth it
5	Form	9	10	90%	Very Worth it
6	Benefit	23	25	92%	Very Worth it
Average				92%	Very Worth it

the module to be tested on class XI students at the Nurul Islam Indonesia Foundation. Trials on these students are to see how students respond to modules based on scientific literacy and student learning outcomes. after using the media. We can see the tabulation of students in table 6.

Table 6. Tabulation of student response results

No	Criteria	Total score	Max Score	Percentage	Criteria
1	Learning	810	875	93%	Very Worth it
2	Module Form	822	875	94%	Very Worth it
3	Module Quality	810	875	93%	Very Worth it
4	Module Function	822	875	94%	Very Worth it
Average				93%	Very Worth it



Graph 6. Percentage of eligibility for biology teachers and students

Product Revision

After testing the use of 35 class XI students at the Nurul Islam Indonesia Foundation, researchers did not receive suggestions and criticism from students to change the appearance of the module teaching materials that had been developed.

Final Products

At this stage, it is the last stage of the research conducted, in which module teaching materials in scientific literacy-based learning activities are developed that have been declared feasible and can be mass-produced. In this case the final product of the researcher is packaged in book form.

Discussion

In implementing the development of scientific literacy-based module teaching materials on the regulatory system material for class XI SMA Yayasan Nurul Islam. Teaching materials can be interpreted as materials or subject matter which are arranged in a complete and systematic manner based on the learning principles used by teachers and students in the learning process. In addition, teaching materials are also unique and specific. In learning activities, teaching materials are very important for teachers and students.

The teacher will have a hard time. Likewise for students, without teaching materials students will experience difficulties in learning. This is exacerbated if the teacher explains the learning material

quickly and unclearly. Therefore teaching materials are very important to be developed as an effort to improve the quality of learning (Wulandari et al., 2022).

One of the teaching materials that can be used is the module teaching material. According to Purwanto et al, modules are teaching materials that are made in accordance with the curriculum that has been set at school and are designed in learning tools to make it easier for students to understand the material and make learning more efficient (Amaliah et al., 2016). The limited teaching materials in circulation, and not yet proportionally supporting all aspects of scientific literacy, makes it difficult for each student to understand the regulatory system material individually (Pratama, 2021). For this reason, it is necessary to have teaching materials that are easy to obtain. One of them is teaching materials presented in the form of printed media, such as modules. Scientific literacy-based modules are a set of teaching materials that are presented systematically in the form of teaching material media so that users can not only learn, but are expected to be able to increase the capacity to use scientific knowledge, identify questions, draw conclusions based on facts (Asrizal et al., 2022).

This research and development refers to three aspects. Until the product developed is declared fit for use in learning activities in the classroom or independently by students. The discussion of these three aspects is summarized as follows.

1. Development of scientific literacy-based learning modules for teaching and learning activities on regulatory system material in class XI SMA.

According to Sugiono, R & D research is a method used to produce and develop products and validate products that have been made. The process of developing teaching materials based on

scientific literacy uses the Sugiono method which consists of several of them such as, potentials and problems, data collection, product design, product validation, product revision, product testing, product revision and final product (Rahmawati et al., 2021).

The development process is carried out starting from the potential and problem stages as well as data collection which aims to obtain information related to the problems faced in learning problems, especially in teaching and learning activities. Planning material is taken from the data obtained which is used as information that is expected to solve existing problems. Then the product design stage is carried out, at this stage the syllabus and lesson plans are carried out, and so on, a validation questionnaire is carried out for the initial design of the product being developed. And starting to develop the product, the researcher optimized Microsoft Office 2010 to make the module teaching materials (Nurlaila & Lufri, 2021).

After the initial product was completed, then product validation was carried out on two experts, namely material expert validation and media expert validation. At the validation stage, an expert stated that the product was suitable for use in field trials. After the product has been validated by material experts and media experts, the module teaching material products that have been developed are tested on biology teachers in class XI and 35 students in class XI. From the results of the research trials, it was found that the product was suitable for use in the teaching process in teaching and learning activities. And finally, the finished product is packaged in the form of a printed book and can be mass-produced.

2. Module feasibility and student responses in scientific literacy-based learning for teaching and learning activities on regulatory system material in class XI SMA

In looking at the feasibility of the media, a feasibility analysis is carried out by conducting research on the media that has been developed. The research was conducted by material experts and media experts. The analysis was carried out by calculating the average value for each aspect on each questionnaire sheet.

Scientific literacy-based teaching materials have been developed and declared suitable for use in the learning process. This is in accordance with Ari Kunto's statement which explains that the validity or appropriateness of a study is in accordance with criteria, namely there is a suitability of the acquisition of test results with predetermined criteria (Silaban et al., 2022).

Based on the results obtained, scientific literacy-based learning media is categorized as very feasible to use. This can be seen from the acquisition of ratings for each aspect which shows an average value for material assessment of 83% and media of 92%, thus the media is in the very decent category.

After scientific literacy-based teaching materials have been developed which are categorized as very suitable for use in learning, it is better to do field use trials in this case, namely the biology teacher and 35 class XI students of the Nurul Islam Indonesia Foundation to see how the biology teacher and students respond to teaching materials in the form of the module that has been developed and also to see the response of teachers and students to the module. The results of the teacher's response can be seen obtaining a percentage of 92% and student responses obtaining a value of 93%. From the results of this assessment, the development of module teaching materials is very feasible to use in the teaching and learning process.

The interest and response of students as well as the response of the teacher is very high because this module study has characteristics that other modules do not have, such as discussion of

modules on daily life and discussions based on scientific literacy, it can be understood that the scientific literacy module is promoting the important concept of development learning literacy, namely the ability to understand scientific facts with science technology to solve terms with real reality. So that the need for scientific literacy for students is important to understand aspects of life and contribute to the social environment.

Before the module is tested in the field, the teaching materials that have been developed have been revised in advance according to the suggestions given by expert lecturers. The suggestions given for these improvements include: 1. Improved the cover on the module, 2. Improved the contents of the module, 3. Improved the shape of the module. From the suggestions for improvement by the expert lecturer, improvements are made to make the product truly feasible. This is in accordance with the opinion put forward by Pratiwi, that teaching materials that are suitable for learning include those that are appropriate for selection (Pratiwi et al., 2020).

Conclusion

Based on the implementation of research at the Nurul Islam Indonesia Foundation High School the results of the analysis obtained in the field, the authors conclude that the development of scientific literacy-based modules on regulatory system material in class XI SMA, namely the development of scientific literacy-based learning modules on regulatory system material in class XI SMA is carried out based on the Sugiono methodology with The eight stages include, potentials and problems, data collection, product design, product validation, product revision, product trial, product revision and final product. The media process uses software such as Microsoft Office to create modules before being used as print media. The feasibility of learning modules for teaching and learning activities on regulatory

system material meets the very feasible category with the acquisition of an average score on each aspect, namely 83% by material experts, 92% by media experts, 92% by biology teachers and 93% by students, so it can be concluded that the learning module is feasible to use in teaching and learning activities. The development of this scientific literacy-based module received a good response and received very satisfactory responses from the biology teacher and students. Thus this module is said to be very feasible and very interesting to use as teaching material for biology class XI SMA Yayasan Nurul Islam Indonesia.

Daftar Pustaka

- Amaliah, A., Raya, J. M., & Makassar, K. (2016). Uji Praktis E-Book Berbasis Studi Kasus Pada Materi Perubahan Lingkungan Kelas X Sma. *BIOSFER, J.Bio. & Pend.Bio*, 1(1).
- Aristina, R., & Isnaeni, W. (2022). Development Of Pbl-Based Module To Facilitate Students' Science Literacy And Independence Skills. *Unnes Science Education Journal*, 11(1).
- Asrizal, A., Zan, A. M., Mardian, V., & Festiyed, F. (2022). The Impact Of Static Fluid E-Module By Integrating Stem On Learning Outcomes Of Students. *Journal Of Education Technology*, 6(1), 110. <https://doi.org/10.23887/jet.v6i1.42458>
- Ginting, V. E. (2018). Analisis Tingkat Literasi Sains Buku Teks Biologi Kelas Xi Pada Materi Sistem Saraf Di Sma Se- Kecamatan Pancurbatu Tahun Pembelajaran 2016/2017. *Jurnal Pelita Pendidikan*, 6(1). <https://doi.org/10.24114/jpp.v6i1.8900>
- Khairi, M. A., & Ikhsan, J. (2022). Development Of Guided Inquiry-Based Electronic Modules And Its Effects On Students' Chemical Literacy. *Jkpk (Jurnal Kimia Dan Pendidikan Kimia)*, 7(2), 181. <https://doi.org/10.20961/jkpk.v7i2.62319>
- Nainggolan, N. Y. S., Subali, B., & Edi, S. S. (2021). Application Of Teaching Material Science Of Sets-Oriented To Increase The Ability Of Science Literacy Junior High School Students. *Scientiae Educatia*, 10(1), 74. <https://doi.org/10.24235/sc.educatia.v10i1.3158>
- Nurlaila, N., & Lufri, L. (2021). The Effect Of Guided Inquiry Learning Models Using The Help Of Student Activity Sheet On The Knowledge Competency Of Students In Class Xi Of Sman 1 Sungayang. *Journal Of Physics: Conference Series*, 1940(1), 012120. <https://doi.org/10.1088/1742-6596/1940/1/012120>
- Permatasari, D., & Anhar, A. (2019). Based Module Development Pbl (Problem Based Learning) In The Matter Excretion Systems For Class Xi Mipa Sman 3 Kerinci. 15(2).
- Pertiwi, N. P., Nurhayati, N. D., & Saputro, S. (2022). Analysis Of Science Literacy Teaching Book Class Xi At Sma Negeri Surakarta On Acid-Base Material. *Thabiea: Journal Of Natural Science Teaching*, 5(1), 17. <https://doi.org/10.21043/thabiea.v5i1.11719>
- Pratama, O. R. (2021). The Need Analysis Of Learning Module Development Using Self Organized Learning Environment (Sole) Assisted By Augmented Reality On Rotational Dynamics And Rigid Body

- Equilibrium. *International Journal of Innovation and Education Research (IJIER)*, 1(1).
- Pratiwi, G., Akhdinirwanto, R. W., & Nurhidayati, N. (2020). Pengembangan E-Ukbn Dengan Aplikasi Kvisoft Flipbook Maker Dalam Pembelajaran Fisika Untuk Meningkatkan Kemampuan Problem Solving Peserta Didik. *Jipfri (Jurnal Inovasi Pendidikan Fisika Dan Riset Ilmiah)*, 4(2), 46–55. <https://doi.org/10.30599/jipfri.v4i2.697>
- Rahmawati, S., Masykuri, M., & Sarwanto, S. (2021). The Effectiveness Of Discovery Learning Module Classification Of Materials And Its Changes To Enhance Critical Thinking Skills. *Jurnal Inovasi Pendidikan Ipa*, 7(1). <https://doi.org/10.21831/jipi.v7i1.33253>
- Silaban, R., Sitorus, M., Musa Panggabean, F. T., & Manullang, E. (2022). The Development Of Electronic Module Based On Scientific Literacy On Colloidal Topic. *International Journal Of Computer Applications Technology And Research*, 11(06), 223–230. <https://doi.org/10.7753/ijcatr1106.1007>
- Syamsurizal, S., & Ardianti, R. (2021). Booklet Sistem Koordinasi Sebagai Suplemen Bahan Ajar Biologi. *Journal for Lesson and Learning Studies*, 4(3).
- Ulfaa, I., Hidayat, S., & Anggis, E. V. (2022). Androbocation Berbasis Science, Environment, Technology, Society, Islamic Integration Dan Hots (Higher Order Thinking Skill) Pada Materi Sistem Koordinasi. *Jurnal Pendidikan Biologi*, 12(3), 207. <https://doi.org/10.17977/um052v12i3p207-213>
- Wulandari, N. D. K., Panjaitan, R. G. P., & Tenriawaru, A. B. (2022). Validity Of Learning Module Containing Information About Anticholesterol Activity Of Sawi Dayak (Elephantopus Mollis) On Circulatory System Disorder. *JURNAL ATRIUM PENDIDIKAN BIOLOGI*, 7(2), 125. <https://doi.org/10.24036/apb.v7i2.12644>

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