



Original Article

Development of History Problems Based on Higher Order Thinking Skills (HOTS) Using Anderson Krathwohl Taxonomy

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Abstract:

This study aims to 1) analyze the condition of the historical electronic module currently used at SMA Banda Aceh, especially in class XII Indonesian history subjects, 2) describe the development of the historical electronic module that was developed, and 3) describe the feasibility level of the electronic module that has been developed. This research is a type of R & D research by adopting the development model of Borg and Gall. To produce this historical electronic module, researchers adopted two stages of development, namely the preliminary research stage and the development research stage. In the preliminary research stage, the researcher conducted a library study and observation. In the development research stage, the researchers carried out module designs, validated with experts and educators, revised, and conducted initial trials on six class XII students at SMA Banda Aceh. The research process was carried out using research instruments in the form of validation sheets and questionnaires. The results showed that 1) the historical electronic module used at SMA Banda Aceh in class XII is a module from the Kemendikbud, 2) the process of developing this module was carried out using Heyzine media in accordance with the advice of experts and educators, the initial trial process was carried out on six students with the final results of PBL-based historical electronic modules for class XII students at SMA Banda Aceh are very suitable for use, with a score of 98% from module experts, 88% from material experts, 86% from educators, and 90% from students.

Keywords: History Problem, High Order Thinking Skills (HOTS), Anderson Krathwohl Taxonomy

Introduction

The development of science accompanied by very rapid technological developments requires educators to be able to adjust teaching materials according to the needs of students during the learning process. The development of science and technology turned out to be very influential in the learning process in the classroom. The use of teaching materials during the learning process is very helpful for educators in delivering teaching materials to students. According to [Cupcake \(2020:312\)](#) Teaching materials are a set of materials that are systematically arranged for use in the learning process. The teaching materials themselves contain materials, methods, limitations, and ways of evaluating specifically designed to achieve learning objectives. One of the things that educators consider when teaching is the availability of electronic teaching materials that suit the needs of today's students. Interest in exploring information about teaching materials was also obtained during initial observation, researchers conducted interviews and literature studies on teaching materials that educators used during providing learning to students. Based on the results of initial observations, researchers found that educators have used various forms of teaching materials during the learning process. The teaching materials used are school textbooks, *e-book*, Documents, e-modules of the Ministry of Education and Culture, and websites on the internet. The interest of researchers in developing media about the history of HOTS is based on the conditions of the modules used. Educators do not develop electronic modules, but adopt directly the Historical Question Media from the Ministry of Education and Culture module. Media Problem History originating from the Ministry of Education and Culture is still in the form of PDF files. This condition causes a decrease in interest and curiosity of students to use teaching modules. One way to overcome this condition is to take advantage of advances in science and technology that are developing today. Advances in technology and communication can attract the attention and increase the curiosity of students during the teaching and learning process. This condition is supported by the ability of students to use electronic devices during learning.

The answer to this problem was answered by the development of a teaching material product in the form of Media about the history of HOTS. For this reason, researchers developed a teaching material in the form of Media about the history of HOTS. The process of developing media about the history of HOTS is carried out using *the Problem Based Learning* (PBL) model with the aim of increasing the interest and curiosity of students. Through this model, the resulting module will move away from the problem, thus requiring students to find problem solutions to answer the given problem. The material to be developed is "History of the New Order Period" which is the result of discussions between researchers and educators who teach class XII history subjects at SMA Banda Aceh. In accordance with the problems found at the initial observation stage, the researcher developed a *flip book*-shaped teaching e-module with Heyzine media which contains videos that are not yet contained in *the Ministry of Education and Culture e-module and contains images that are able to attract and can foster students' curiosity during learning*.

Methods

This research will produce a final product in the form of Media about the history of HOTS, to produce a research module using a research and development approach or *Research and Development* (R&D). R&D research is a research that has the final stage in the form of a new product and tests the effectiveness of the resulting product. This type of research can also be used to develop and validate a product ([Suggestion, 2019:395](#)). R&D research will produce a certain product, through R&D will be produced a new form of technology in the field of learning. The same thing was conveyed by Seels & Richey in ([Rayanto & Sugianti, 2020:19](#)) which states that "instructional technology is the theory and practice of design, development, utilization, management and evaluation of process and resources of learning" This means that learning technology is a theory and practice in the design, development,

utilization, management, and assessment of learning processes and resources.

Researchers do not fully adopt the development stages of the Borg and Gall model, researchers adopt only half of all stages, here are the stages that researchers adopt from the Borg and Gall model; 1) preliminary research (exploration, identifying teaching materials used, responses from educators and students regarding teaching materials, an overview of teaching material needs, discussing the initial form of modules to be designed), 2) development (initial module form design and validation, product revision, and initial trials). Based on the steps of R&D research with the Borg & Gall model, researchers summarize these steps into three stages of research, namely the preliminary research stage, the development stage, and the effectiveness test stage.

Application of the Borg and Gall Model in Every Stage of Research

Development research stage

The technique for preparing the HOTS history media questions in this study was prepared based on the curriculum and basic competencies that apply in accordance with the historical material of the new order period at SMA Banda Aceh class XII. According to [Crowbar \(2008:456-457\)](#) The systematics of the material prepared in making modules using the PBL model begins with the introduction of problems to students, guiding problem solving, presenting the results of student cooperation, and in the last stage there is an evaluation stage. Things that need to be considered to compile a module start from collecting material that will be used as material for making modules, videos, images, and animations. After passing this stage, researchers can compile a media about the history of HOTS. According to [Septora \(2017:88\)](#) The steps in compiling modules in general are as follows, namely: (1) Analysis of module needs related to activities carried out to analyze KD, indicators, and learning objectives to match the content of the module. In addition, at the needs analysis stage, problems in schools are also studied to support the module products to be produced. At this stage, researchers analyze the needs of modules by interviewing educators who teach class XII Indonesian history subjects at Labschool USK schools; (2) The preparation of the draft in question is related to the preparation of learning materials based on the results of KD analysis, indicators, and learning objectives into a structured whole. In preparing the initial draft, researchers discuss with educators to get results that are in line with educators' expectations. The preparation of the initial draft will begin with determining the title, final goal, intermediate goals, outline in the form of the product to be produced, developing the material in outline, and re-examining the initial draft that has been designed. (3) After designing the initial draft, the module will be tested for limited use to students. The purpose of the limited trial is to determine the level of ease of use of the modules used by students, test the effectiveness of the material used by students during learning, and to determine the level of understanding of students during learning by using the initial draft of the module. (4) At this stage, researchers ask for validation from several experts to consult on the feasibility and quality of modules that have been designed according to the point of view of each expert. Validation experts who are used as *validator* consists of material experts, module experts, and educators who teach class XII Indonesian history subjects at SMA Banda Aceh; (5) Revision is the stage of improvement and refinement of the module after obtaining advice from validation experts. This stage aims to complete the module according to the advice of validation experts so that the module can be produced for widespread trial.

Initial trial execution

The initial trial was conducted on students at SMA Banda Aceh. Initial trials are conducted through small group trials and large group trials. In this study, researchers only passed the initial trial in a small group by conducting trials on six students taken according to the advice of educators who teach class XII history subjects.

Data collection techniques

Data collection techniques are a very important stage in research. Data collection techniques relate to the accuracy of using ways to collect data. The data collection process can be done by various techniques. Techniques that can be used in the data collection stage consist of questionnaires, interviews, observations, and a combination of all these techniques (Suggestion, 2019:194). In this study, researchers used data collection techniques in the form of questionnaires.

Table 1. Student Assessment Score

Value Weighting	Criterion	Score
5	Very Worth It	$80\% < P \leq 100\%$
4	Proper	$60\% < P \leq 80\%$
3	Pretty Decent	$40\% < P \leq 60\%$
2	Less Decent	$20\% < P \leq 40\%$
1	Very Less Feasible	$0\% < P \leq 20\%$

Source: Sedarmayanti in Rohmaini et al., (2020:179)

Results

Teaching materials are a set of teaching materials that are arranged to achieve learning objectives. Teaching materials have specific and unique properties, said to be unique closely related to the use of teaching materials themselves. Teaching materials can only be used for certain teaching materials and certain lessons. The specifics of a teaching material concern the form of teaching materials that are arranged systematically to achieve certain goals. The process of delivering teaching materials will be adjusted to each subject (Nuryasana & Desiningrum, 2020:968). Teaching materials have very influential uses in learning, through the use of teaching materials educators and students will be helped to carry out learning in the classroom. The use of teaching materials also supports the achievement of competency standards and basic competencies through various forms of teaching materials used such as books, modules, *wallchart*, radio, CDs, cassettes, and VCDs. The teaching materials are used by educators to facilitate the participants to be educated in understanding the teaching material (Arsanti, 2018:74).

Media Condition about the history of HOTS used today at SMA Banda Aceh

The pre-research process that has been carried out by researchers to find the condition of the media about the history of HOTS used today in SMA Banda Aceh was carried out using field studies. This is in line with the opinion of Rijali (2019:84) That said, qualitative forms of data collection can be implemented by a series of field processes. The techniques used by researchers are in the form of interviews, observations, and questionnaire dissemination. This technique is carried out by visiting SMA Banda Aceh to obtain information related to the condition of the media about the history of HOTS. This information collection process is a process of initial observation that has been carried out by researchers from August 5-12, 2022. Based on data collection techniques that have been implemented by researchers during research at SMA Banda Aceh. The HOTS history question media used at SMA Banda Aceh is in the form of History Question Media from the Ministry of Education and Culture, the use of this module aims to be additional teaching material during the teaching and learning process in Indonesian history subjects.

Analysis of the needs of educators and students is carried out to collect information related to the needs of educators and the attraction of students to the development of media

about the history of HOTS. According to [Pratama et al., \(2022:10\)](#) The process of analyzing the needs of educators can be done by distributing questionnaires. Researchers analyzed the needs of educators and students for the History Question Media by distributing questionnaires. In addition to distributing questionnaires, researchers also use interview techniques, and observation when educators teach. This process aims to find data on educator needs regarding the modules to be developed. This process is also carried out for students to find out the needs of students for the media about the history of HOTS, to find out the needs of students, researchers distribute questionnaires containing questions related to the modules to be developed.

Media Design about the history of HOTS based on Anderson's Taxonomy

The design stage passed by researchers was preceded by collecting material related to the New Order period. The material used by researchers comes from various sources such as books that discuss the new order period, journals and documents containing material about the new order. In addition to the material, researchers also collect images and videos that are in accordance with the material developed. The process of collecting resources is carried out by paying attention to the needs of students and adjusting to the IP and KD as well as the module indicators contained in the modules provided by the Ministry of Education and Culture.

The stage passed after collecting sources regarding the material developed is to unite and package the material obtained into word form and save it in PDF form. Once the material is available in PDF form, the PDF file is then exported into the *Heyzine* application for editing by adding some video features to the module, when learning learners can watch footage of events that correspond to the material developed. Through this media, module products will produce paper sound when students open the next page to increase the attractiveness of students during the learning process. Media Design History Problems passed by researchers include components contained in modules such as *covers*, tables of contents, glossaries, concept maps, competencies, module identities, brief descriptions of materials, instructions for use, steps for use, learning objectives, learning materials, videos that support the material, assignments, summaries, self-assessments, evaluations, answer keys, and bibliography.

Discussion

Media Condition about the history of HOTS used today at Labschool USK High School

The History Question Media used by educators who teach class XII history subjects at SMA Banda Aceh is a module from the Ministry of Education and Culture. Educators directly adopt modules published by the Ministry of Education and Culture. The condition of the Historical Question Media used is still the same as other historical electronic books, the language used is still the same as the language contained in historical printed books. The image features contained in the module are still few and there is no video feature that supports the material in the module. Researchers did not find any development of modules used in the learning process, the modules used were in the form of Historical Question Media from the Ministry of Education and Culture and there was no video in it. Therefore, researchers develop a module that is more interesting and can encourage learners' curiosity and can be used independently. Material selection is based on discussion with educators. The results of the discussion informed that the relatively long new order material requires a Historical Question Media that is more interactive with users.

The media about the history of HOTS used is still visual and only displays writing and pictures. According to [Wahyugi and Fatmariza \(2021:790\)](#) Media Problem History can be developed more interactively by combining several media elements such as video, audio, images, and animation. Studies that have been carried out during the research starting from the initial observation stage found the fact that educators have never developed interactive modules. According to [Dewi & Lestari \(2020:435\)](#) Interactive modules are modules that

combine text, audio, images, graphics, and video that are able to create a two-way relationship between users and modules. This condition encourages researchers to develop Media Historical Problems using media *heyzine* for historical material during the New Order period. Researchers develop the History Question Media used by adding several video features to the module developed to facilitate students in the learning process. In addition, the use of video is expected to make it easier for students to learn.

Media Design about the history of HOTS

The final result in this study is in the form of media about the history of HOTS. To produce the final product, researchers adopted the Borg and Gall development model consisting of ten stages of research. The ten stages of Borg and Gall model research according to Sugiyono (2019: 404) are potential and problems, data collection, product design, design validation, design revision, product trial, product revision, usage trial, product revision, and mass production. In accordance with the stages of R&D research which consists of three stages of research, namely preliminary research, development research, and effectiveness trials. Researchers only adopt two stages, namely the preliminary research stage and the development research stage. To produce a product, the stages passed by researchers consist of potential problems, data collection, product design, design validation, design revision, and product trials. This stage is adjusted to the needs of researchers, the stage of potential problems and data collection is adjusted into an exploration stage by conducting field studies and literature studies to produce an overview of the needs of educators and students, this series of stages is at the preliminary research stage. The product design, design validation, design revision, and product trial stages are adjusted to design and design validation, design revision, and small group trials are at the development research stage. Preliminary research passed by researchers produces an overview of the form of teaching materials used. According to Yusuf et al. (2023:93) teaching materials consist of popular scientific books, scientific books, *Handouts* modules, field guides, and *Booklet*. Equivalent to the opinion above, it was found that one form of teaching material used by educators at SMA Banda Aceh is modules. The module used is in the form of Historical Question Media from the Ministry of Education and Culture. The module used is not modified and in pdf form, for that researchers develop modules using media *Heyzine* which comes with video additions. In the initial display of the History Question Media, a video will be presented that guides students to solve problems related to the material to be studied. The packaging of modules with this media accompanied by additional videos is expected to attract the attention of students to use the module during learning.

Media Feasibility of PBL-based HOTS history for grade XII students at SMA Banda Aceh

Eligibility for modules produced by researchers is determined by the validation results of module experts with a percentage of 98%, material experts with a percentage of 88%, educators with a percentage of 86%, and students with a percentage of 90%. The eligibility criteria used in this study are in accordance with the opinion of Sedarmayanti in (Rohmaini et al., 2020: 179) with criteria of $80\% < P100\%$ with a very feasible category. Through this criterion, it can be concluded that the <modules that have been produced by researchers are very feasible to be used as teaching materials in the form of History Question Media in history learning for class XII at SMA Banda Aceh.

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This research produces a product, namely an electronic module, to produce an electronic module, researchers use the type of R&D research by adopting two stages of research, namely the preliminary research stage and the development research stage. The stages in this study have been adjusted to the stages of Borg and Gall. The preliminary

research stages that have been passed by researchers produce information about the condition of the History Question Media currently used at SMA Banda Aceh. Media conditions about the history of HOTS used at SMA Banda Aceh in the form of Media Questions History published by the Ministry of Education and Culture. The Historical Question Media used is in the form of original Historical Question Media and is not developed by educators. The module used does not contain video and is still in the form of a PDF file. Through this study, researchers developed a media about the history of HOTS by adding several supporting material videos, the module development process using media in the form of *Heyzine media*. The development stage that has been passed by researchers produces designs from the Media about the history of HOTS. This stage begins with designing the Media about the history of HOTS and saving it in PDF format.

References

- Abubakar, R. (2020). *Pengantar Metodologi Penelitian*. Yogyakarta. Antasari Press. <http://repository.ub.ac.id/id/eprint/173882>
- Afandi, M., Chamalah, E., & Wardani, P. O. (2013). *Model dan Metode Pembelajaran di Sekolah*. Semarang. Unissula Press. <https://doi.org/10.1016/j.cpc.2008.12.005>
- Anggis, E. V. (2008). Teknik Penyusunan Modul Materi Sistem Ekkresi dengan Model Problem Based Learning Biologi SMA. *Proceeding Biology Education Conference*, 14, 455–458.
- Arsanti, M. (2018). Pengembangan Bahan Ajar Mata Kuliah Penulisan Kreatif Bermuatan Nilai-Nilai Pendidikan Karakter Religius Bagi Mahasiswa Prodi PBSI. *Kredo*, 1(2), 71–90.
- Budiastuti, D., & Bandur, A. (2018). Validitas dan Reliabilitas Penelitian. In *Binus*. Jakarta. Mitra Wacana Media.
- Dewi, M. S. A., & Lestari, N. A. P. (2020). E-Modul Interaktif Berbasis Proyek terhadap Hasil Belajar Siswa. *Jurnal Imiah Pendidikan Dan Pembelajaran*, 4(3), 433–441.
- Fahrurrozi, M., & Mohzana. (2020). *Pengembangan Perangkat Pembelajaran (Tinjauan Teoritis dan Praktik)*. Nusa Tenggara Barat: Universitas Hamzanwadi Press.
- Fauzan, M. (2021). Pengembangan Modul Inovatif dalam Pembelajaran Bahasa Arab. *Prosiding Konferensi Nasional Bahasa Arab VII*, 7(1), 643–654.
- Feriyanti, N. (2019). Pengembangan e-modul matematika untuk siswa SD. *Teknologi Pendidikan Dan Pembelajaran*, 6(1), 1–12.
- Kemendikbud. (2022). *Pedoman Kurikulum Dalam Rangka Pemulihan Pembelajaran: Menteri Pendidikan, Kebudayaan, Riset, Dan Teknologi*.
- Handayani, E. T. Y., Nursetiawati, S., & Mahdiah. (2020). Pengembangan Modul Pembelajaran Sanggul Modern. *Jurnal Ilmiah Wahana Pendidikan*. 6(3), 317–322.
- Jusuf, H., & Sobari, A. (2021). Pelatihan Pembuatan Modul Pembelajaran Untuk Mendukung Pembelajaran Online. *JAM-TEKNO: Jurnal Pengabdian Kepada Masyarakat TEKNO*, 2(1), 33–37.
- Novianti, R. (2019). Pengaruh Lingkungan Belajar Terhadap Tingkat Konsentrasi Belajar Siswa Pada Mata Pelajaran Akidah Akhlak di MAN 2 Palembang. *Jurnal PAI Raden Fatah*. 1(1), 1–20.
- Magdalena, I., Sundari, T., Nurkamilah, S., Nasrullah, & Amalia, D. A. (2020). Analisis Bahan Ajar. *Nusantara : Jurnal Pendidikan dan Ilmu Sosial*, 2(2), 311–326.
- Masrinah, E. N., Aripin, I., & Gaffar, A. A. (2019). Problem Based Learning (PBL) Untuk Meningkatkan Keterampilan Berpikir Kritis. *Seminar Nasional Pendidikan*, 924–932.
- Nuryasana, E., & Desiningrum, N. (2020). Pengembangan Bahan Ajar Strategi Belajar Mengajar Untuk Meningkatkan Motivasi Belajar Mahasiswa. *Jurnal Inovasi Penelitian*. 1(5), 967–974.
- Pangkey, G., Tulandi, D. A., & Lolowang, J. (2022). Interaksi Demokratis dalam Pembelajaran Eksploratif Fenomena Perubahan Suhu Udara dan Suhu Tanah. *Jurnal Pendidikan Fisika*. 3(2), 96–106.
- Pratama, R., Alamsyah, M., & Noer, S. (2022). Analisis Kebutuhan Guru Terhadap Pengembangan Modul dalam Meningkatkan Kemampuan Berpikir Kritis Peserta

- Didik. *EduBiologia: Biological Science and Education Journal*, 2(1), 7–13.
- Puspitasari, A. D. (2019). Penerapan media pembelajaran fisika menggunakan modul cetak dan Media Soal Sejarahpada siswa SMA. *Jurnal Pendidikan Fisika*, 7(1), 17–25.
- Rahayu, J., Solihatin, E., & Rusmono, R. (2019). Pengembangan Modul Pembelajaran Online Pada Mata Pelajaran Kimia. *Jurnal Ilmiah Wahana Pendidikan*, 5(1), 13–28.
- Rayanto, Y. H., & Sugianti. (2020). *Penelitian Pengembangan Model Addie Dan R2D2: Teori & Praktek*. Pasuruan: Academic and Researcher.
- Retnawati, H. (2016). *Analisis Kuantitatif Instrumen Penelitian (Panduan Peneliti, Mahasiswa, dan Psikometrian)*. Yogyakarta: Parama Publisng.
- Rijali, A. (2019). *Analisis Data Kualitatif*. Alhadharah: Jurnal Ilmu Dakwah, 17(33), 81–95.
- Rohmaini, L., Netriwati, N., Komarudin, K., Nendra, F., & Qiftiyah, M. (2020). Pengembangan Modul Pembelajaran Matematika Berbasis Etnomatematika Berbantuan Wingeom Berdasarkan Langkah Borg and Gall. *Teorema: Teori Dan Riset Matematika*, 5(2), 176.
- Saat, S., & Mania, S. (2020). Pengantar Metodologi Penelitian. Gowa: Pusaka Almaida.
- Septora, R. (2017). Pengembangan Modul dengan Menggunakan Pendekatan Saintifik pada Kelas X sekolah Menengah Atas. *Jurnal Lentera*, 2(1), 86–98.
- Sugiyono. (2019). *Metode Penelitian Kuantitatif, Kualitatif, dan R&D*. Bandung: Alfabeta.
- Sofyan, H., Wagiran, Komariah, K., & Triwijono, E. (2017). *Problem Based Learning dalam Kurikulum 2013*. Yogyakarta: UNY Press.
- Susanto, S. (2020). Efektifitas Small Group Discussion Dengan Model Problem Based Learning Dalam Pembelajaran Di Masa Pandemi Covid-19. *Jurnal Pendidikan Modern*, 6(1), 55–60.
- Suwartaya, Emy, A., Rujiyati, Saputra, S., & Setyaningsih, D. A. (2020). Panduan Pengembangan Bahan Ajar Pembelajaran Jarak Jauh (Ba-Pjj) Sekolah Dasar (2020th Ed.). Dinas Pendidikan Kota Pekalongan.
- Syamsidah, & Suryani, H. (2018). *Buku Model Problem Based Learning (PBL)*. Yogyakarta: CV. Budi Utama.
- Wahyugi, R. & Fatmariza. (2021). Pengembangan Multimedia Interaktif Menggunakan Software Macromedia Flash 8 Sebagai Upaya Meningkatkan Motivasi Belajar Siswa Sekolah Dasar. *Edukatif: Jurnal Ilmu Pendidikan*. 785-793.
- Yuafian, R., & Astuti, S. (2020). Meningkatkan Hasil Belajar Siswa Menggunakan Model Pembelajaran Problem based learning (PBL). *Jurnal Riset Pendidikan Dasar*, 03(2), 207–213.
- Yuberti. (2014). Teori pembelajaran dan pengembangan bahan ajar dalam pendidikan. In *Psikologi Pendidikan* (Vol. 1). Lamung: Anugrah Utama Raharja.
- Yusuf, M., Mahrudin, & Irianti, R. (2023). Kajian Keanekaragaman Jenis Pohon di Tepian Sungai Tanipah Sebagai Bahan Ajar Berbentuk E-Booklet Pada Konsep. *Jurnal Pendidikan dan Ilmu Sosial*. Vol. 2(1).