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DEVELOPMENT OF INTERACTIVE E-MODULES IN RELIGIOUS EDUCATION: A CASE STUDY ON PENDIDIKAN ASWAJA AND KE-NU-AN

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Abstract

Driven by the need for a suitable module to facilitate the teaching of Pendidikan Aswaja dan Ke-NU-an subject, we have developed an electronic module (e-module) based on Merdeka Belajar curriculum. This research aims to develop a module and analyze how the module can be useful in improving understanding, memory, and empowering students to take a more independent learning approach. The aim of Pendidikan Aswaja dan Ke-NU-an as local content subject is to safeguard students from radicalism, extremism, fanaticism and religious intolerance. The research methodology employed in this study is Research and Development (RnD) utilizing the 4D development model comprising four stages: Define, Design, Develop and Disseminate. The e-module incorporates learning outcomes and objectives aligned with Merdeka Belajar curriculum, along with interactive video links connected to the online platform such as YouTube. The results from pilot testing of these interactive e-modules in two sample classes yielded a commendable score of 79%, categorizing it as "fit for use." The module's utilization by 67 students across both classes demonstrated significant competency development in knowledge acquisition, comprehension, critical thinking and prevention from radical and extremist viewpoints. This can be seen from affective and cognitive assessments at school. Furthermore, the module effectively addresses epistemological challenges within the field of Aswaja and Ke-NU-an teaching, aligning with the historical evolution of these disciplines and local educational needs.

Kerwords

Interactive learning; Religious tolerance education; Digital educational tools.

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Introduction

Effective learning media are essential in order to achieve effective teaching and learning, in addition to the indispensable role of teachers (Dontre, 2021). Instructional media play a crucial role in the teaching and learning process (Putra et al., 2017); one form of instructional media is a teaching module. The need for modules is critical in implementing effective learning activities. Modules could assist students in learning and retaining the material presented. For instance, in the context of Green Learning, teaching modules are highly necessary (Kuo & Madni, 2023). Without modules, the communication of learning outcomes and objectives becomes unclear, and students' thinking abilities are limited (Hamzah et al., 2022). Consequently, achieving learning outcomes becomes a challenging endeavor.

Despite the importance of learning modules in achieving students' learning outcomes, not every school can afford them. For instance, in SMK YPM 3 Taman, Sidoarjo, East Java, modules relevant to the current curriculum, *Kurikulum Merdeka Belajar*, are unavailable. More specifically, there are absence of modules for local content subjects such as “*Pendidikan Aswaja dan Ke-NU-an*” (*Ahlussunnah wal Jama'ah* and *Nahdhatul Ulama*).

Due to the unavailability of learning modules that are aligned with the *Merdeka Belajar Curriculum*, students resorted to note-taking as their primary learning method. Undoubtedly, this approach could be monotonous for students, especially considering the rapid technological advancements today. Technology now plays a crucial role as a source of exploration of information (Zubiaga, 2019). Media can be explored to achieve instructional objectives by providing fresh perspective in information delivery, particularly within the context of learning (Kurniawati et al., 2020). Moreover, technology can be applied across various platforms, both online and offline, facilitating both face-to-face and distance learning (commonly known as online learning). Based on the needs analysis, it is necessary to develop electronic modules that are aligned with the *Merdeka Belajar Curriculum*. Therefore, the initiative to create modules with technological assistance is expected to be a breakthrough that simplifies students' learning experience in subjects such as “*Aswaja dan ke-NU-an*”.

The module which is being developed is transformed into an electronic format, giving rise to the term electronic module or what is commonly known as an e-module (Suwandi et al., 2023). E-modules serve as a solution to assist students in mastery and apply skills (Nuraeni et al., 2023). An e-module, defined as a computer-based learning medium, incorporates text, images, graphics, audio, animations and videos for the learning process. This interactive e-module learning media is supported by Indonesian Government Regulation Number 57 of 2021 number 1 concerning National Education Standards which states that learning in schools must be carried out actively in order to develop students' potential (Hutahaean, 2019). The development of interactive e-modules should adopt a flexible, iterative and organic approach to evaluating, revising and fulfilling instructional design projects in response to challenges and opportunities (Ezell, 2021). This shows the importance of developing modules through a flexible approach, especially following current developments.

Smeets and Bus argue that e-modules embedded with multimedia features can enrich the experiences of reading books when used correctly (Smeets et al., 2014). Interactive e-modules are the best alternative contribute to improving reading comprehension and reading interest (Winatha, 2018). According to Arsyad, interactive e-modules allow students to get involved not only into the sense of hearing but also vision. The more senses used to retrieve information, the greater the chance that the information will be remembered and understood. Experts have

proven an obvious difference in the learning outcomes obtained through the senses of sight and hearing (Nurrita, 2018).

An e-module should ideally be an interactive medium, as the teaching and learning process itself always involves interaction activities (Priyonggo & Qosyim, 2018). With this interactive e-module, students can learn independently anywhere. This is in line with the concept of the module, which aims to be a learning medium used when the teacher cannot be present in the class, thus strengthening the purpose of education for everyone, anytime. This e-module is useful to cover the lack of practice schedules and inadequate practice facilities (Nuraeni et al., 2023). This shows that e-modules are very useful for facilitating students to learn independently.

The success of interactive e-modules in learning has been found by, among others, Imansari and Sunaryantiningsih, who noted that the use of interactive e-modules as a learning medium is categorized as very good with an average score of 84.72% (Imansari & Sunaryantiningsih, 2017). The students' responses also showed that all aspects of the questionnaire are categorized as very good, thus interactive e-modules are suitable for use as a learning medium in the learning process (Hutahaean, 2019). Another study that shows the success of electronic modules is the research by Tamrongkunan and Tanitteerapan on the development of a set of electronic learning modules to improve students' knowledge and skills. Based on the statistical analysis of the T-test, these three modules are effective in terms of improving students' knowledge and skills (Tamrongkunan & Tanitteerapan, 2020). Additionally, the students' post-test scores are seen higher than the pre-test scores.

The design of the e-module that is developed in this study is for the *Pendidikan Aswaja dan ke-NU-an* subject, specifically for grade 12. The e-module will be equipped with attractive graphic design and layout facilities, enriched with communicative language to make it easier for students to understand the e-module, included with the learning objectives in the *Merdeka Belajar curriculum*, relevant practice questions, and evaluations in each chapter, along with interactive video links. With this electronic module, the learning process could be more effective, efficient and support interaction between teachers and students, hence they can understand the concept of the lesson and experience an improvement in learning outcomes. This hypothesis is in accordance with research by Diansah and Asyari who tested the effectiveness of the electronic module they developed. The results of their research show that the effectiveness of electronic modules is high and the use of these modules helps students understand the material presented (Diansah & Asyari, 2020). This shows the importance of modules as teaching materials for students.

Numerous studies have based on Problem-Based Learning (PBL) with Google Classroom to improve argumentation skills (Fahmi, 2021). Based on the data and results of the study, it was found that the science learning tool based on Problem-Based Learning through Google Classroom is appropriate for use on the topic of the interaction of living things with their environment (ecosystem).

Another study was conducted by Banerjee and Power on the development of a chemical equilibrium module with 46 students in the Chemistry Methodology course. Banerjee's study showed significant competency development in the domains of knowledge and understanding, processes, problem-solving, and application. This present study differs from previous studies, in a way that its focus aims to produce a valid interactive e-module product based on the *Merdeka Belajar Curriculum* for Aswaja and NU subject. The presentation of learning outcomes according to the phase of the *Merdeka Belajar Curriculum* in this e-module is

expected to be able to develop competencies and understanding of tolerance in students. The achievement of competency in understanding student tolerance is to respect the differences in worship practices in each religious group and avoid radical and extremist understandings of religion.

Method

This study is categorized as a research and development (R&D) research with 4D model, developed by S. Thiagarajan and Semmel (Ziatdinov & Valles Jr, 2022). The development stage include: define, design, develop and disseminate (Thiagarajan et al., 1974). The present research is conducted in September-December 2023. The research site is SMK YPM 3 Sidoarjo located on Jln. Ngelom Megare No. 30, Taman, Sidoarjo, East Java. The school is under the Yayasan Pendidikan dan Sosial Ma'arif (YPM) Sidoarjo (Vachruddin et al., 2022). The inclusion of SMK YPM 3 Taman as a research site is based on the fact that this school does not have a learning module for the subject *Pendidikan Aswaja dan ke-NU-an*. This school is one of the Islamic schools included in the selected vocational school in the government development program of 2023 (Vachruddin et al., 2023). The research subjects for this study are students of Class XII in two classes: XII AKL 2 and XII OTKP 1 with a total of 67 students.

Based on the 4D model, the development of interactive e-module for the subject *Pendidikan Aswaja dan ke-NU-an* is conducted into four stages such as: The first stage is the Define stage. At this stage, the needs and objectives of the learning process are defined, which can be divided into several stages, including: (1) An initial analysis, conducted to identify the fundamental problems encountered during the learning process. It involves a material analysis to identify and systematically arrange the material according to the basic criteria, (2) Task and concept analysis, carried out to formulate learning objectives developed based on a contextual approach to understanding concepts in the main topics of Pendidikan Aswaja dan Ke-NU-an, (3) Understanding and examining student characteristics, to gather data on students' cognitive development, abilities, and knowledge background for product development, (4) The formulation of Learning Objectives, based on the initial analysis and task and concept analysis. General learning objectives are formulated based on factual conditions related to several cases that occur due to a lack of understanding of Pendidikan Aswaja dan Ke-NU-an (Herawati & Muhtadi, 2018).

The next stage is the Design or planning stage. At this stage, the module is designed along with several research instruments. This design stage is divided into four stages (1) The preparation of standard materials and tests based on the results of the analysis at the Define stage, (2) Media selection, to achieve learning objectives effectively and efficiently, based on the result of the analysis that has been carried out at the Define stage, (3) Format selection, based on the formulation of learning objectives that have been described at the earlier stage. This format selection is related to graphic design and layout for the cover display, content and teaching strategy selection, (4) The initial design, based on the process of preparing standard materials and tests to format selection. From this process, an initial design of the e-module development plan is produced.

Following the Design phase, there is Develop stage for arranging the e-module materials. From this stage, it is determined that the development of the present e-module is purely visual media. This material is developed from the scientific classification of Kalam science and NU adapted from the module developed by LP Ma'arif (LPM) NU Yogyakarta.

Once the e-module has been fully developed, a validation stage is carried out on the e-module in the form of evaluations/validation by two experts namely material validators and media validators. Material validators were selected based on their experience of teaching Aswaja and NU education material in universities and being actively involved in the LP Ma'arif Nahdlatul 'Ulama organization. Meanwhile, media validators were selected based on the position of multimedia assessor at the center of excellence vocational school in Sidoarjo. Material validation includes the suitability of the material with the curriculum applied by the school, the sequence of material, the availability of the material, the suitability of the formulation of learning objectives (TP) based on learning outcomes (CP) with the material presented, standard tests and the level of difficulty of the tests presented and the use of communicative language in the e-module. Meanwhile, media validity includes the proportional layout of the cover, synchronization of graphic illustrations, visuals, verbals, backgrounds, image displays, the suitability of the selection of font types and sizes, module size, ease of use of the module, color proportions of the module, ease and suitability of the table of contents and bibliography.

After the validation assessment is conducted, the results and suggestions from the validators are used as the basis of the e-module revision. After the revision process, the author submits the validation back to the two validators to carry out the trial stage to sample classes of grade XII SMK YPM 3 Taman. Two classes are chosen, namely class XII AKL 2 and XII OTKP 1 with a total of 67 students. The results of this trial are used to finalize the e-module.

The data collected in this research and development (RnD) study are both qualitative and quantitative. The data analysis is carried out through descriptive verbal data analysis and product feasibility assessment data. Descriptive verbal data obtained from interviews and observations are analyzed by transcribing oral verbal data, selecting and classifying, analyzing data and formulating conclusions from the analysis results as a basis for compiling the developed product (Hidayat & Khotimah, 2019). Interviews and observations were carried out indirectly with the deputy principal for curriculum and several teachers for Aswaja and NU education subjects. Interviews and observations need to be carried out to analyze needs at the definition stage.

On the other hand, data for assessing the quality of media development is obtained through the results of a questionnaire given to a sample of students, material validator and media validator. The questionnaire used to determine the feasibility of the developed e-module in a Likert scale. The Likert scale is used to measure individual behavior by responding to five choice points on each question item, namely: strongly agree, agree, undecided (neutral), disagree, and strongly disagree. The Likert scale is not a data type that measures individual traits, but the measurement of knowledge or attitudes using the total score from the question items is an interval measurement scale (Budiaji, 2013).

Finally, the last phase is the Disseminate or distribution stage. This stage is divided into three processes: validation testing, to re-validate whether the e-module has achieved the learning outcomes (CP) and learning objectives (TP). Then, the packaging stage, analyzing users, strategies and themes. In this stage, the timing of distribution and the media for distribution need to be carefully considered. The final stage is Diffuse and adoption, aiming for From these three phases of development, suggestions and feedback from the e-module users are being used for revision for the following version of the e-module. The detailed research stages are shown in Figure 1.

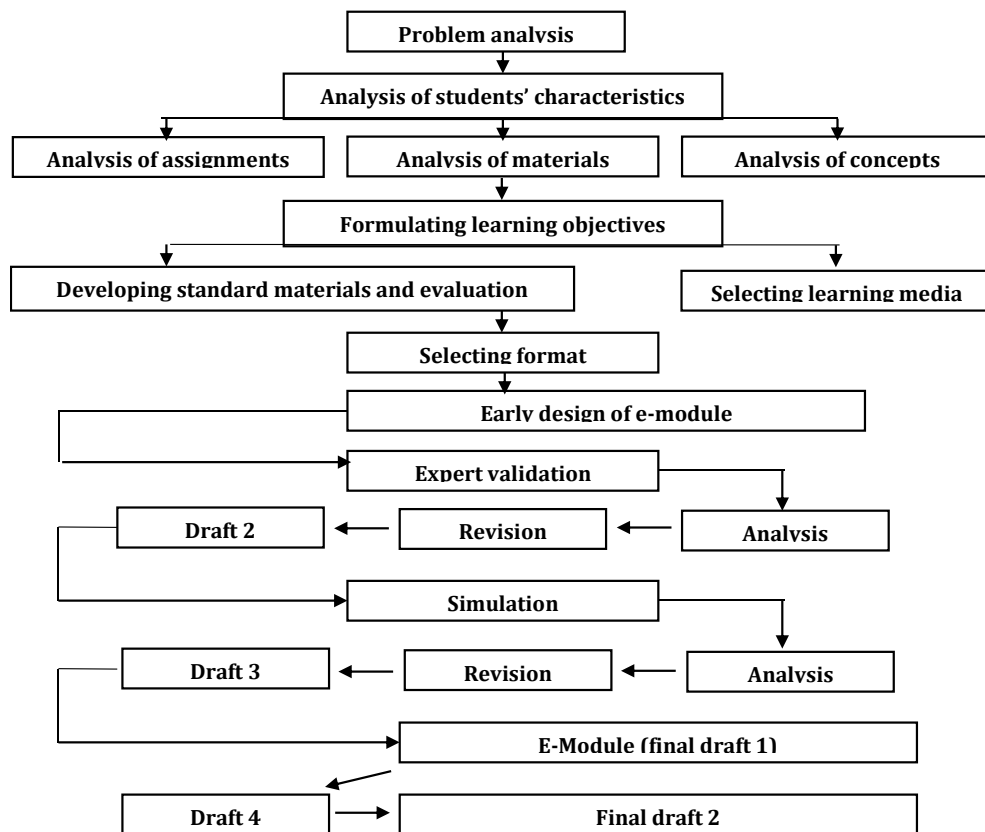


Figure 1. Stages of study

Results

The research and development process in this study has yielded an electronic module product, also known as an e-module. As previously explained in the research methodology, the development of this e-module follows the 4D development model, pioneered by S. Thiagarajan. The 4D development model comprises four stages: 1) Define, 2) Design, 3) Develop and 4) Disseminate. The following section outlines the stages involved in the research and development of the e-module for Pendidikan Aswaja dan Ke-NU-an.

1. Define

The initial stage before creating a product involves the Define phase. This step aims to articulate the objectives and requirements for developing a particular product (Mourtzis, 2020). In this study, the objectives and needs for an interactive e-module are rooted in the learning process. The Define phase is further divided into four sub-stages:

a. Initial analysis

Initial analysis is conducted through in-depth interviews with the deputy principal for curriculum and teachers of Pendidikan Aswaja dan ke-NU-an subject through observation in one of the Class XII of SMK TPM 3 Taman, Sidoarjo, East Java. This initial exploration resulted that the Pendidikan Aswaja dan ke-NU-an is a local content in Islamic schools, which generally emphasizes tolerance and prevent students from radicalism (Kasdi et al., 2020). The learning objective of this subject is to build students' tolerance among the religious communities and to spread peace in their social communities (Suprpto, 2020).

Classroom situation suggests in observation that there are no modules or teaching materials available for students, either in print or non-print form. Therefore, during each learning process, the teacher writes the teaching content on the blackboard, or the students photocopy the material from the book. There are no modules for these subjects because the school considers these subjects to be local content, forcing teachers to innovate themselves. On implementation formative or summative assessments are conducted, they only rely on the notes they made. This greatly affects the assessment results for students who did not take notes or missed the class.

In this initial analysis stage, the choice of developing electronic modules aims to provide convenience for students and parents to access materials more easily and affordably (Suhardin et al., 2021). At this stage also, an analysis of the material is also carried out to identify and arrange the materials according to the standardization of materials. Pendidikan Aswaja dan ke-NU-an materials are generally developed by LP Ma'arif Nahdlatul 'Ulama, who in each province has various material selection due to various factors ranging from adjusting the school's subject hours and so on. For example, Pendidikan Aswaja and ke-NU-an material in the module developed by LP Ma'arif NU Yogyakarta, each level contains ten materials according to class level. Meanwhile, because Pendidikan Aswaja and ke-NU-an subjects at this school are local content subjects and only have one hour of class time each week, the material was shortened to five materials and focused on the areas of Aswaja and Nahdlatul 'Ulama teachings.

The author's analysis of the Pendidikan Aswaja dan ke-NU-an module developed by LP Ma'arif NU Yogyakarta suggests that there is no synchronization and scientific classification according to the development process of the material, resulting in the expansion of material outside the context of Pendidikan Aswaja dan ke-NU-an subject such as regarding *ijtihad*, *taklid*, Islam and politics and so on.

b. Analysis of tasks and concepts

This analysis is conducted to formulate learning outcomes (CP) and thus produce learning objectives (TP) based on the analysis. Learning outcomes (CP) and learning objectives (TP) in this educational institution are adjusted to the decision of the Head of the Educational Standards, Curriculum and Assessment Agency number 008/KR/2022 concerning learning outcomes in early childhood education, basic education and secondary education in the independent curriculum. Namely in phases C and F on the Elements of Sejarah peradaban Islam (SPI) and Aqidah. The analysis is carried out at this stage to identify the students' main tasks to achieve minimum competence. Further, a conceptual analysis is carried out by following the data collection process from a systematic literature review (Antera, 2021) to identify the main concepts of the materials to be taught, the type of teaching materials and the types learning resources being used.

The materials taught in the Pendidikan Aswaja dan Ke-NU-an subject are those which prioritize multicultural values from the perspective of traditionalist Islamic teachings in Indonesia. There are many other multicultural values that can be incorporated in the materials, including the values of democracy, mutual respect, togetherness, helping each other, justice and equality (Pransiska, 2020). Pendidikan Aswaja dan Ke-NU-an also emphasizes moderate Islamic values, including the values of *tasamuh* (tolerance), *tawasuth* (behave moderately), *al-tawazun* (act in balance), and *I'tidal* (side with the truth) (Sodikin & Maarif, 2021). As such, the development of this

e-module correlates with the promotion of students' moderate attitudes (Purwanto et al., 2019).

Based on the task and concept analysis, it is concluded that the main learning tasks of the students should be in accordance to the learning outcomes (CP) that have been formulated in the Decree of the Head of the Standardization, Curriculum and Education Assessment Agency number 008/KR/2022 about learning outcomes the Merdeka Belajar curriculum. This is due to the fact that Pendidikan Aswaja dan Ke-NU-an materials' learning outcomes (CP) in the Merdeka Belajar are categorized as faith and morals. For the teaching materials or learning resources, the LP Ma'arif NU module is used with the addition of similar materials related to the Kalam science.

c. Students' characteristics

Analysis of student characteristics is necessary to understand and examine the characteristics of students related to cognitive development and knowledge background. This is conducted on the basis of the psychological typicality of high school and vocational students. Research by Suharno finds that 74% of vocational school students feel bored during learning due to the abundance of social lessons (Suharno et al., 2020). Therefore, interactive learning media is needed to overcome this boredom. Further, vocational school students begin to have a high curiosity about concepts in religion. This becomes a main focus in Pendidikan Aswaja dan Ke-NU-an. This research is in accordance with the characteristics of students at this research location, as a vocational school, students are more active and enthusiastic if they do practicum directly. Boredom in receiving social lessons is felt by teachers through students' expressiveness which shows an indifferent attitude and drowsiness in class.

Generation Z also has high skills in accessing technology and information from the internet. So the development of this electronic module will raise students' high interest in accessing information freely and easily. The knowledge background related to religious thoughts associated with the environment, place of learning, friends, could lead to intolerance, fanaticism and radicalism among students (Wolfowicz et al., 2020). In a study, it was mentioned that violent actions by children were motivated by radical teachings that they accessed via the internet. Therefore, Pendidikan Aswaja dan Ke-NU-an subject must be present in addressing the issue of religious thoughts that trigger radical actions in students. Although observational data shows that there are no symptoms or behavior of students that constitute acts of radicalism and extremists.

d. Formulation of learning objectives

Upon analyzing the tasks, concepts and characteristics of students, learning objectives are then formulated. In general, the learning objectives of Pendidikan Aswaja dan Ke-NU-an materials are to facilitate students to avoid radicalism and intolerance. The main emphasis of the learning is also to avoid fanaticism in the students' religious attitudes. Data from the state intelligence agency shows that 39% of students in Indonesia are exposed to radicalism (Ali, 2021).

These learning objectives are in accordance with the learning outcomes (CP) based on the Decree of the Head of the Standardization, Curriculum and Education Assessment Agency number 008/KR/2022 about learning outcomes in early childhood education, primary education and secondary education in Merdeka Belajar curriculum. The subject is categorised into the theme *Aqidah* (faith), which begins with the occurrence of Muslim sects (Kalam science), the diverse thoughts in Kalam science, the

sect of Ahlus Sunnah wal Jama'ah (Aswaja), the organization of Nahdlatul 'Ulama, and finally religious moderation.

2. Design

The design phase is conducted following the Define stage. It aims at designing e-module and preparing research instruments (Hafeez, 2021). This design phase includes four steps such as:

a. The development of material and evaluation standard

The material included in the e-module for the subject Pendidikan Aswaja dan ke-NU-an is the compilation and curation of LP Ma'arif NU, Ministry of Religious Affairs, and other related materials that meet the standard of the Standardization, Curriculum and Education Assessment Agency in the Decree number 008/KR/2022. The decree outlines learning outcomes in early childhood education, primary education and secondary education in Merdeka Belajar curriculum.

The material presented in the e-module for Pendidikan Aswaja dan Ke-NU-an is divided into five chapters, namely: The history of divisions and sects in Islam (Kalam science), Ahlus Sunnah wa al-Jama'ah (Aswaja), the main thoughts and doctrines of the Aswaja, Nahdhatul 'Ulama (NU) and religious moderation. As for the evaluation, written assessments are presented in the form of multiple-choice and essay questions, divided into: daily assessments, formative and summative assessments. The questions presented follow the standard of MOTS (Middle Order Thinking Skills) and HOTS (Higher Order Thinking Skills) questions.

b. Selection of media

Based on the analysis results in the Define phase, the development of this module is decided to be non-print or electronic, commonly known as an e-module. According to the Technology Acceptance Model (TAM) theory, electronic learning shows a positive perception for its ease of access that supports usefulness (Khairani et al., 2021). In addition, the design of this e-module is mainly visuals without any audio, animation, or other interactive videos. However, access links directly connected to YouTube are inserted, hence students can view videos related to the material presented in each chapter. The selection of videos on YouTube is performed by considering videos that support moderate religious views, and excluding those that promote intolerance, radicalism, and extremism.

The factor of internet quota and the students' reluctance in downloading new phone applications are some challenging factors, therefore inspiring the development of this e-module in a PDF format that could be downloaded when there is internet connection and accessed/read the downloaded file anywhere. The e-module can be accessed online on the school website, namely <https://smkypm3taman.sch.id/> this makes anyone can see and download the e-module for free.

c. Selection of format

The selection of format in this stage is related to the design of the cover, e-module content and learning strategy. The design of the front and back cover is designed using Canva and Corel Draw applications. The color proportions of the front and back covers are dominated by dark green with the addition of white on the font of the e-module title, symbolizing NU.

The front cover displays a photo of the Istighotsah Akbar event held by the Nahdhatul 'Ulama, downloaded from the tempo.co page. In addition, on the front cover,

the Nahdhatul 'Ulama symbol is added along with the SMK YPM 3 Taman school symbol. The school symbol is included because the e-module is currently used for its own academic community members, thus limiting the users of the e-module. The title is clearly displayed in big letters on the e-module cover, accompanied by the words “Class 12” and “Including Religious Moderation Materials”. The front and back covers of the e-module are shown in figures 2 and 3.



Figure 2 and 3. E-module front and back covers

The addition of religious moderation material is aimed to be an attraction of this e-module because religious moderation is newly developed and promoted by the Ministry of Religion since 2019 to counteract radical attitudes, intolerance and fanaticism in religiosity. Religious moderation is a perspective that takes a moderate or balanced attitude in practicing religion and gives respect to other people’s religious practices (Umar et al., 2021). The addition of religious moderation material has been adjusted to the formulation of learning objectives that have been carried out at the Define stage.

As for the back cover, a brief overview of the e-module contents is presented, along with the symbols of Nahdhatul 'Ulama and the school. For the content design, an attractive header and footer that combines curved line patterns and colors between green, gold, and white is included. On each page of the e-module, there is the title and page numbering in the lower right corner of the pages.

The teaching of Pendidikan Aswaja dan Ke-NU-an subject is conducted with the teaching model of the 21st century, aiming at improving students’ 4C (critical thinking, creativity, communication and collaboration). 4C is included in this e-module along with the aspects of Merdeka Belajar curriculum (Dewi & Suniasih, 2023). The integration of 4C in module development is evidenced in the exercises and Youtube video analysis activity.

d. Initial design

E-modul is designed as an interactive e-module with some criteria as follows:

- 1) Interesting graphic design and layout
- 2) Communicative language

- 3) Clear learning objectives (there is CP, element and phase in each chapter)
- 4) Relevant exercise in each chapter
- 5) Summary in each chapter
- 6) Link of videos according to the themes in the e-module

Based on these criteria, the e-module is then developed accordingly. These criteria as well serve as the criteria for expert evaluation in the validation process. CP (Learning Outcomes), Elements, Phases and You tube links are shown in figures 4 and 5.

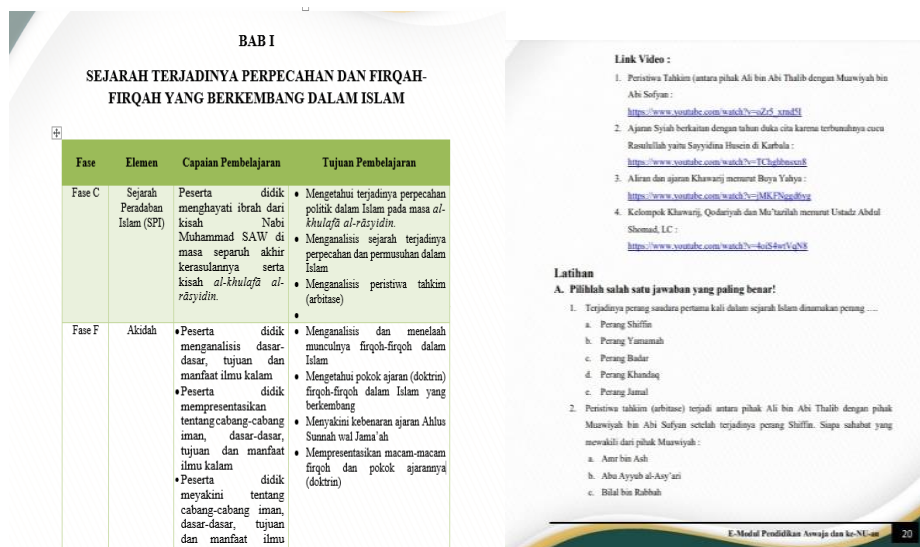


Figure 4 and 5. CP (Learning outcomes), Element, Phase and Youtube link

3. Develop

a. Validation by experts

Product assessment by experts is used to identify deficiencies and suggestions that can be used to improve the interactive e-module. In this study there were two expert validators, namely one material expert validator and one media validator. Validation is carried out by filling in a validation sheet which is carried out directly after the validator sees the electronic module that has been developed. The following are the results of the assessment as well as comments and suggestions from expert validators:

The evaluation by materials specialist suggested that there is lack in the developed e-module, especially related to the usage of language or wordings that do not align with PUEBI standard. For instance, the use capitals, italics, question marks and commas. Despite these lackings, the given score is 81%, indicating that the e-module is very appropriate to use. The validation values by learning material experts can be seen in table 1.

Table 1. Score of validation by learning material expert

Aspects	Indicators	Score	Mean
Format	Appropriateness of materials to the Basic Competence (KD)	5	5

	Appropriateness of materials to the Learning Objectives	5	
	The depth of materials	4	
Materials	Appropriateness of materials to students' ability	4	4,2
	Appropriateness of additional explanation	4	
	Appropriateness of the order of materials	4	
	Difficulty level of evaluation	5	
Language	Using proper and accurate wordings	4	3,5
	Using easy-to-understand wordings	4	
	Using unbiased words	3	
	Following the convention of PUEBI (Pedoman Umum Ejaan Bahasa Indonesia)	3	

Based on the validation by media expert, there are some deficiencies related to the font size in the table of content, which was considered to be too small. The expert suggested to revise the font with bigger size and to add more pictures into the content. Score for the validation was 77%, indicating that the e-module was considered **appropriate to use**. The results of the e-module validation by learning media experts can be seen in table 2.

Table 2. The results of e-module validation from a learning media expert

Aspect	Indicators	Score	Mean
Design	Proportional cover layout (the placement of text and pictures)	5	4,3
	Synchronized graphic illustrations, visuals, description and background	4	
	Eye-catching cover design	4	
Coloring	Image presentation	4	4
	Proportional color combination	4	
	Good color selection for illustration, typography, and text styling (bold, italics, underlines, etc.)	4	
Graphics	Suitability of font selection (letters and numbers)	3	3,2
	Clear title of the module	4	

	Easily-located table of content	3	
	Appropriate size of module	3	
Supporting	Bibliography/ references	4	4
	In-text citation	4	

From the two examination by two learning media experts, it shows that this interactive e-module is eligible for usage, with revisions as suggested. Validation results can be seen in Chart 1.

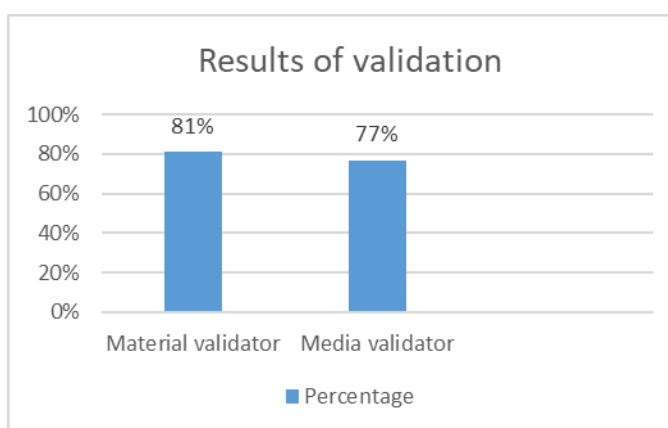


Chart 1. Result of Validation

b. Development trial

The trial for the interactive e-module for the subject of Aswaja dan ke-NU-an was conducted with the population of XII-grade students from SMK YPM 3 Taman, Sidoarjo, East Java. The sample classes were XII Accounting 2 and XII Office Administration 1, totalling 67 students. During this phase, the e-module was distributed to all respondents and utilized during interactive discussion-based learning sessions. The interactive discussion method is one of the approaches recommended to develop character education (Muhibah, 2020).

For the assessment of the development trial, a questionnaire with 10 statement indicators was utilized. Each statement was developed using the Likert scale, which allows individuals to respond on a five-point scale: strongly agree, agree, neutral, disagree, and strongly disagree. It is important to note that the Likert scale does not measure individual traits but rather assesses knowledge or attitudes using total scores from the questionnaire items, representing an interval measurement scale (Budiaji, 2013).

The questionnaire was developed through Google Forms application and distributed via Google Classroom and WhatsApp. Before distributing the questionnaire, revisions were made based on the feedback from the experts and the revised e-module was disseminated to the two sample classes. As such, students had already utilized this interactive e-module during their learning process for the subjects of Aswaja dan ke-

NU-an. Besides, the interactive e-module was also introduced to the subject teachers. Thus, it is expected that both teachers and students can utilize the e-module as a teaching resource and reference material during their teaching and learning process.

The scores obtained by Class XII AKL 2 from the 10 questionnaire statements reached 79%. Meanwhile, the scores obtained by Class XII OTKP 1 from the same 10 statements reached 78%. The average percentage score across both classes was 79%, falling within the “Acceptable” category according to the Likert scale. One of the statements in the questionnaire pertained to the perceived difficulty level of the presented questions. The percentage score for this statement was 68%, categorizing it as “Difficult” based on the Likert scale. The assessment of the E-Module by students can be seen in Chart 2.

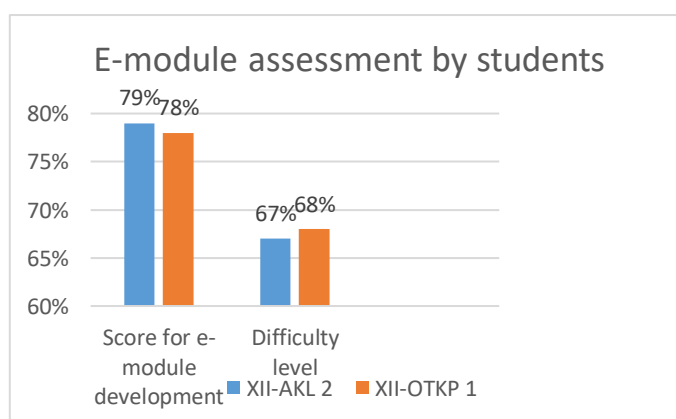


Chart 2. E-Module assessment by students

4. Dessiminate

This is the last phase of product development according to 4D model. To disseminate means an effort for implementation (Sumanti et al., 2023) by promoting the developed e-module to individuals, groups or systems. Below is the process of dissemination for the Pendidikan Aswaja dan Ke-NU-an module:

a. Validatiton testing

The revised interactive module in the develop phase was then implemented to the students of Class XII SMK YPM 3 Taman. Besides, the product was also disseminated to the teachers of Pendidikan Aswaja dan Ke-NU-an subject to gain their feedback. In this validation testing, both students and teachers are expected to provide constructive feedback and comments to revise the e-module. After the dissemination of e-module, an assessment on the learning objective achievement is was conducted. This is to measure the effectivity of the developed e-module.

The measurement of learning objectives achivement is divided into two crucial aspects: knowledge and attitudes. Knowledge is assessed through the attainment of Learning Outcomes based on daily assessments, formative evaluations and summative assessments. Meanwhile, attitudes are measured through religious thought patterns, characterized by the absence of radicalism, fanaticism and religious intolerance. The results of observations before the distribution of this electronic module showed that in the affective aspect there were still some students who were unable to appreciate differences of opinion in religious practices at school. Meanwhile, in the cognitive aspect, based on formative and summative assessments, students' scores are in the low category.

b. Packaging

Effective packaging is essential to attract users' interest. In the context of interactive e-module, packaging involves selecting the right timing and distribution channels. After revising the development stage, the e-module is disseminated via Google Classroom and WhatsApp. Specifically, the chosen time for distribution is Sunday morning or one day before the start of the learning process. This strategic timing encourages students to at least open the e-module before the next day of school.

c. Diffusion and adoption

Through the validation testing and packaging, interactive e-modules are expected to be diffused or understood by the subject teacher of Pendidikan Aswaja dan Ke-NU-an. As such, the e-module could be used and adopted in their respective classes. In principle, the development of this e-module differs from other electronic module development approaches. As an example a study conducted by Tamrongkunan and Tanitteerapan focusing on developing learning modules to enhance students' knowledge and skills with a sample of 34 students. Although employing the 4D development model, their research evaluated learning outcomes through pre- and post-tests and T-tests, emphasising on enhancing student skills (Tamrongkunan & Tanitteerapan, 2020).

The development of this e-module for Aswaja and Ke-NU-an subject challenges the theory of secularization, which posits that the role of religion in society inevitably declines with the societal modernization (Smith & Schapiro, 2021). On the contrary, the technological advancements, such as electronic modules, enable universal access for all individuals to learn from the module content that promotes understanding of religious tolerance and moderation. This research provides an illustration that learning of local and regional content subjects can be developed through innovative electronic module development. This provides the potential that other subjects can adapt to the development context in accordance with technological needs and demands.

Discussion

There are several points to discuss based on the findings. The following are the descriptions.

1. Digital Transformation as the solution to boredom in study (the Reflection of the Define Stage)

The result at the Define stage (sub-chapter 1a) shows that students at SMK YPM 3 tended to feel bored during class. They sometimes look sleepy. It's because there were no adequate and accurate materials for the heavy substance of the social sciences. Moreover, conventional teaching methods, such as writing the text on the whiteboard and using photocopied materials, were still used. The presence of e-modules in the teaching and learning process at SMK YPM 3 was supportive, especially for vocational school students, who are generally Generation Z with higher technological literacy. (p4) BY providing easy and affordable access to e-modules through downloadable PDF formats, this product addresses the psychological needs of vocational school students, who are more active and enthusiastic when engaged in interactive media, while also overcoming the limitation of internet quotas through its offline access feature.

Finally, the shift from paid printed/photocopied formats to free access on school websites demonstrates efforts to democratize access to education. Administrative obstacles, schools considered *Aswaja* to be 'local content' that did not require special printed modules,

have been resolved through inexpensive but high-quality digital solutions. Distribution via Google Classroom and WhatsApp ensures that learning is no longer hampered by physical classroom space or the lack of textbooks.

2. Material Reconstruction and Innovation of Religious Moderation (The Reflection of the Design Stage)

The qualitative strength of this e-module development lies in the synchronization of material carried out at the Design stage (sub-chapter 2a). Researchers found inconsistencies in the previous LP Ma'arif module, which included material outside the context, such as *ijtihad* and politics (p. 2), both of which are less relevant to current conditions. As an innovation, this e-module has been curated into five focus chapters in accordance with BSKAP Head Decree No. 008/KR/2022 (p. 5). The special emphasis on Religious Moderation material (p. 7) is a crucial novelty. As explained in the research results, the integration of the values of *tasamuh* (tolerance) and *tawasuth* (moderation) through curated YouTube videos aims to protect students from exposure to radicalism, which, according to state intelligence data, has reached 39% among students (p. 4).

The most crucial difference lies in the Special Material aspect. amidst the challenges of digital radicalism (39% exposure among students, p. 4), the old module did not provide a clear portion on Religious Moderation material. The researchers deliberately made Religious Moderation the main 'attraction' (p. 7). In qualitative discussions, this shows that the e-module serves a dual purpose: as an instructional medium and as instruments of counter-radicalism. Researchers successfully translated the concept of moderation (*tasamuh*, *tawasuth*, *tawazun*) into digital language, which is more relevant to students, improving the understanding of tolerance more applicable in their social lives.

3. The Dynamic of Validation: Content Dialectic and Digital Aesthetics (The Reflection of the Development Stage)

Based on the data on the Develop stage (pp. 9-11), this e-module product underwent a rigorous testing process involving the subject matter and media experts. The material validation score of 81% (p. 9) indicates that, substantively, the material curation has met competency standards. However, more crucial qualitative findings emerged from the validators' notes regarding the use of PUEBI grammar (p. 9) and visual media aspects, which scored 77% (p. 10).

This analysis reveals that in the development of digital media, linguistic and aesthetic aspects are not merely complementary, but rather cognitive instruments. Input regarding font sizes that are too small and the need to add visual illustrations (p. 10) was an effort to adapt to the characteristics of vocational school students, who tend to be visually oriented. This phenomenon explains why, even though the media score was lower than the material, design revisions were key to ensuring that the 'truth of the content' could be conveyed without being hampered by 'visual noise', so that the product remained highly suitable after undergoing design evolution

4. The Instructional Gap: Accessibility VS Academic Rigour (The Reflection of Dissemination Stage)

At the Disseminate stage (pp. 11–12), an interesting fact was discovered, namely that the average student response reached 79% (Acceptable Category), but there was a challenge in terms of the level of difficulty of the questions, which students found difficult, with a score of 68% (p. 12). Qualitative analysis of this gap indicates that the ease of access to e-modules through digital platforms does not necessarily reduce the complexity of *Aswaja* material, which is inherently abstract.

On the contrary, these e-modules have succeeded in raising students' thinking standards from the memorization level (LotS) to critical reasoning (HotS) and 4C skills

(Critical Thinking, Creativity, Communication, Collaboration) through the integration of YouTube video analysis (p. 7). The existence of questions categorized as 'Difficult' is evidence that these e-modules are effective in stimulating students' intellectual challenges. They are not merely light reading, but rather instruments for serious theological study packaged in a modern way.

One of the most notable practical findings in the dissemination process is the product packaging and distribution strategy. Researchers deliberately chose to distribute the materials on Sunday mornings or one day before lessons began via Google Classroom and WhatsApp (p. 12). Qualitatively, this action is a form of learning management intervention to stimulate pre-learning (early independent learning).

This strategy takes advantage of the digital behavior of students (Gen Z) who are always connected to mobile devices, so that their free time is converted into opportunities for moderate religious literacy. This proves that the effectiveness of an R&D product not only depends on internal product quality (validity) but also on the accuracy of the implementation strategy in the field (diffusion of innovation).

The Novelty and Theoretical Contribution

Compared to previous studies, such as those by Tamrongkunan & Tanitteerapan (p. 13), this study goes beyond merely improving technical skills. This e-module product offers an idea to the challenges of Secularization Theory (p. 13) by convincing that technological advances actually strengthen the role of religion in the public sphere of vocational schools through the values of moderation. The novelty of this research lies in its ability to synchronize national policy (Merdeka Curriculum/BSKAP 008/2022) with local needs (*Aswaja*) and global challenges (radicalism), which is realized in an accessible, interactive digital medium with moderate ideological

To sum up, the e-module developed by researchers is not only technically superior (interactive PDF format), but also in substance (material curation) and strategy (internalization of moderation). These advantages explain why this product is well received by students (79%) and considered suitable as a replacement or companion to conventional modules in the field.

Conclusion

Through a structured procedure using the 4D development model, an interactive e-module has been created for the subject of *Aswaja dan ke-NU-an* (Nahdlatul 'Ulama). The content of these interactive e-modules is derived from a curated compilation of materials presented by LP Ma'arif NU and the Ministry of Religious Affairs (Kemenag RI), combined with additional materials aligned with learning outcomes and objectives (CP) as outlined in Decree No. 008/KR/2022 issued by the Head of the National Standards, Curriculum, and Educational Assessment Agency (BSNP) regarding learning outcomes in early childhood education, primary education and secondary education within the Merdeka Belajar curriculum.

In general, the selection of content for the subject "*Aswaja dan ke-NU-an*" aims to safeguard students from radicalism, fanaticism and religious intolerance. This particular subject also outlines multicultural values through the delivery of moderate Islamic principles, which strongly correlate with the formation of moderate student characters. Furthermore, the careful selection of materials within each discussion in the e-module contributes to addressing epistemological challenges in the subject of "*Aswaja dan ke-NU-an*", aligning with the historical development of these fields of knowledge.

Based on the results of pilot testing of this interactive e-module in two sample classes, a percentage of 79% was achieved, falling within the category of "Acceptable" according to the Likert scale interval. Through the validation testing and packaging process, it is hoped that the

interactive e-module can be effectively comprehended and used by both teachers of Aswaja and Ke-NU-an subject and by the students, hence hence the e-module can be utilized or adopted in their respective classrooms.

Unfortunately, due to time constraints in this research, the e-module did not have the chance to be perfected. The author recommends conducting further evaluations of students' knowledge and understanding of the e-modules, particularly with a larger subject sample. The author suggests the need for further research aimed at evaluating the effectiveness of the electronic module in the future with more subjects. Apart from that, innovations are needed through the development of media, modules and learning models in Aswaja and NU education subjects in order to eliminate the effects of student boredom in monotonous and boring learning. It is expected that this research bear a significant impact on the development of curriculum-based electronic modules, especially in the context of religious education.

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