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Problem Based Learning E-Module for Facilitating Sociology Learning in the Digital Era

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ABSTRAK

Perkembangan teknologi menghadirkan beragam opsi sumber belajar digital yang bisa digunakan oleh guru, serta menjadi salah satu solusi dalam mengatasi masalah pembelajaran yang kurang interaktif. Penelitian ini memiliki tujuan untuk mengembangkan sebuah produk e-modul berbasis problem-based learning untuk pembelajaran sosiologi di sekolah menengah atas. Pendekatan penelitian ini adalah penelitian dan pengembangan (RnD) yang mengadopsi model 4-D. Pada penelitian ini akan melibatkan dua ahli media, dua ahli materi dan tiga guru mata pelajaran. Teknik pengumpulan data menggunakan teknik non-tes dengan instrumen yang terdiri atas angket. Perolehan skor angket akan dianalisis secara deskriptif dengan persentase. Hasil penelitian ini menunjukkan bahwa e-modul berbasis problem-based learning memperoleh skor persentase 91% dari ahli media dan termasuk dalam kualifikasi 'sangat baik'. Penilaian dari ahli materi memperoleh 86% yang termasuk dalam kualifikasi 'sangat baik. Penilaian dari guru sejumlah 89% yang termasuk dalam kategori 'sangat baik'. Disimpulkan bahwa e-modul yang dikembangkan pada penelitian ini mendapatkan keputusan 'sangat layak' untuk digunakan sebagai media pembelajaran dan diuji coba kepada siswa ke dalam proses pembelajaran sosiologi.

ABSTRAK

This Technological developments present a variety of digital learning resource options that can be used by teachers, as well as being a solution to overcome the problem of less interactive learning. This study aims to develop a problem-based learning e-module product for sociology learning in senior high schools. This research approach is research and development (RnD), which adopts the 4-D model. This research will involve two media experts, two material experts, and three subject teachers. Data collection techniques use non-test techniques with instruments consisting of questionnaires. Obtaining questionnaire scores will be analyzed descriptively with percentages. The results of this study indicate that problem-based learning-based e-modules obtain a percentage score of 91% from media experts and are included in the 'very good' qualification. The assessment of material experts obtained 86%, which was included in the qualification of 'very good. The teacher's assessment is 89% which is included in the 'very good' category. The e-module developed in this study was deemed 'very feasible' to be used as a learning medium and tested on students in the sociology learning process.

1. INTRODUCTION

Today, various aspects of human life are supported and supported by technological sophistication, as well as in the field of education which continues to develop and adopt technology to facilitate the implementation of quality education and learning (Scheiter, 2021; Divayana et al., 2021). Thus, various efforts aimed at improving the quality of learning and improving student performance are the domain of educational technology studies. Technological developments in the field of education are increasing rapidly based on needs and demands to support effectiveness and efficiency in learning (Lim et al., 2020). Changes in the learning system from face-to-face which usually takes place in the classroom or a learning system known as conventional learning design, because it is still centered on the teacher as the main learning resource, to an online system is a form of digital transformation. Online learning connects

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students with their learning resources (databases, teachers/instructors, libraries) which are physically separate or even far apart but can communicate, interact or collaborate with each other (directly/synchronously or indirectly/asynchronously) (Churi et al., 2022; Laksana, 2020). Even though the change in the learning system to an online system, it should not affect or reduce the essence of the learning itself. Learning objectives must still be achieved through various strategies that can be designed and implemented according to the conditions and characteristics of students and the material to be delivered. In learning that is carried out online, special attention is needed so that students are able to achieve the competencies that have been determined. Moreover, on the affective aspect or attitude. Because competence in this aspect tends to be more difficult to apply and assess using an online system (Fendi et al., 2021; Wang et al., 2022). While attitude is an important competency that students need to have in order to be able to compete and adapt to their social environment. Thus, students' social attitudes are expected to be well formed and in accordance with the aspects of attitude competency in their learning (Rismayani et al., 2020; Ramadinata et al., 2020). Social attitude is a tendency to act positively or negatively in certain social situations, such as honesty, discipline, responsibility, tolerance, and so on (Pujawan et al., 2020; Yazdani, 2020).

The inculcation of this social attitude is closely related to learning Social Sciences in the 2013 Curriculum which is contextual in nature, in which the learning concept relates learning material to the real world of students and encourages students to connect their knowledge with application to everyday life (Gayatri et al., 2018; Hamida & Desnita, 2021). As it is known that learning social sciences has been delivered since elementary education, up to higher education. Given the characteristics of the social sciences that will always be embedded in students, in the future they are required to socialize independently with their environment. Besides that, the material in learning social sciences is also very relevant for instilling students' social attitudes, because the characteristics of the material are very relevant to their daily lives (Maulida et al., 2020; Budiaman et al., 2021). Thus, the process of forming new knowledge from a combination of daily life experiences and learning materials will form a social attitude in students regardless of the fast or slow process.

E-modules tend to be flexible and adaptable to various approaches, for example problem-based learning or PBL. Through PBL-based electronic modules, students will be directed to always participate actively, so as to create a dynamic learning environment (Suprapto et al., 2021; Rahayu & Sukardi, 2021). It can be seen from the various benefits provided, this e-module will be able to make it easier for students to understand the information contained in learning material (Park, 2011; Laili et al., 2019). Several studies have shown that e-modules are integrated with problem-based learning (PBL) approaches, and can be used to help students achieve the competencies needed in the 21st century, such as critical thinking, literacy and communication (Kimianti & Prasetyo, 2019; Hastuti et al., 2020; Maharani Zan & Mardian, 2022). Referring to these various types of findings, it turns out that PBL-based e-modules are very useful for improving various student skills, especially skills that are highly relevant to the needs of the 21st century. Meanwhile, social attitudes are very important for students to master, especially after students get used to online learning where their interaction between individuals is very limited. Research states that if students are not accustomed to interacting, their social attitudes will tend to be lacking. In some cases, social attitudes can be improved through the role of the teacher during sociology learning and other social learning (Maulida et al., 2020; Sarwono et al., 2020). Social attitudes are important for students to master, this is also shown through the results of research that has been done that one of the characteristics of individuals reaches a level of maturity in dealing with problems and being sensitive to various problems can be seen from their social attitudes (Setiawan & Suardiman, 2018), in their research sociology teachers try to combine a learning model innovative with the help of audio-visual media as an effort to improve students' social attitudes, which shows that the learning model and the help of audio-visual media contribute to improving students' social attitudes (Ramadinata et al., 2020; Rismayani et al., 2020). Sociology subjects focus on studies related to patterns of interaction that exist in society, these interactions can cause various social phenomena such as social conflict, social mobility or others, because interaction is fundamental in society that can create a new state (Januarti & Hendrastomo, 2018; Patrick Williams et al., 2018). Social Conflict material given to class XI IPS students contains various knowledge about the concept of conflict which is a phenomenon in society. This material includes the definition of social conflict, the factors that cause social conflict, various types of social conflict, as well as efforts to control social conflict. If students can understand this material well, it will instill students' social attitudes related to conflict control abilities or competencies (Ghufronudin, 2019; Ernawati & Wilodati, 2020). The government then made updates and adjustments to the implementation of the 2013 curriculum as a fundamental innovation in the implementation of National education which aims to produce Indonesian individuals who are innovative, creative, productive and effective through affirmation in the cognitive, affective and psychomotor fields so that the competencies achieved by students do not only cover

cognitive aspects, but are related between all three (Setiadi, 2016; Andrian & Rusman, 2019). One approach that is closely related to the implementation of the 2013 curriculum is problem-based learning. Unfortunately, the facts on the ground speak otherwise. The findings at SMA Batik 1 Surakarta and SMA Batik 2 Surakarta show low social attitudes of students, especially when learning is carried out using online (remote) methods. Of the 118 students who were respondents to the social attitude survey, 78 students or 65.52% were classified as students with low social attitudes. This is represented in several indicators of social attitudes as measured by a questionnaire. These indicators include honesty, discipline, responsibility, and tolerance or concern for friends. This was also reinforced by an interview with Mrs. Sri Lestari, S.Pd, M.Sos, M.Pd who is a Sociology teacher at Batik 1 Surakarta High School, she revealed that students' social attitudes need to be developed and paid more attention, for fear that they will continue to experience a decline character due to social attitudes that are less formed positively. In addition, based on data at the Surakarta Batik High School, it shows that the use of learning media is not optimal, where 79.6% of students stated that during online learning, the teacher only conveyed material soft files, 16.7% had synchronous discussions through the WA group on each subject. This is also supported by the results of observations and direct interviews with several students at Batik 1 High School, when learning took place, the teacher delivered more material in the form of files sent using the WA Group platform and then gave assignments only. Students think that using a method like this is less able to facilitate their learning so that learning is not optimal. In addition, students also want a more varied learning media. In order to achieve learning objectives in distance learning conditions, teachers are required to develop learning with innovative and creative learning methods by including developments in learning technology in the learning process in class, for example such as the use of media.

The facts above show that, between the implementation of the national curriculum and the facts on the ground, a gap is found where not all national education instructions can be implemented optimally. In fact, currently technology is highly developed and increasingly sophisticated, both teachers and students are very familiar with the presence of digital technology devices (Camilleri & Camilleri, 2017; Rahiem, 2020). With the development of technology, digital teaching materials, as mentioned earlier, have also experienced a shift in format, which was previously limited to print media, now it is very varied (Tafonao, 2018; Budiastuti et al., 2018). In several countries, the use of ICT for the learning process tends to increase rapidly, starting from the sophistication of technology and the level of participation towards the integration of ICT-based learning media during the learning process (Zou et al., 2021; Singh, 2016; Wulandari et al., 2021; Dwivedi et al., 2021). One of these sophistications is contained in an electronic module or e-module. E-modules in their use to support the learning process are proven to be able to have a positive impact on student academic achievement (Maiyena & Imamora, 2020; Nandiyanto et al., 2020). Through e-modules, material that is usually delivered to students in text form can be combined with other forms such as videos, animations and pictures (Alfiras & Bojiah, 2020; Hariyani et al., 2021; Yulando et al., 2019). Ease of navigation by users is also one of the benefits provided by e-modules, this is intended so that students can learn according to their abilities (Resita & Ertikanto, 2018; Sun & Pan, 2021).

The presence of technology can be a stimulus to develop an innovation, one of which is learning innovation through the e-module product development process. E-modules, as several previous studies have proven, can support the learning process, therefore e-modules will be able to become a source of digital learning, especially for Sociology subjects. This research has novelty and differences with several previous studies (Kimianti & Prasetyo, 2019; Hastuti et al., 2020; Widya et al., 2021), where in this study there is a problem-based learning approach that is integrated into the e-module program flow so that it is relevant to the needs of 21st century competencies and e-module products that can be used on smartphones (Melumad & Pham, 2021; A. I. Sari et al., 2019), This is of course because most of the use of e-modules is only limited to use in computer equipment and other subjects such as mathematics, natural sciences, physics, and Indonesian, while the e-module products developed will contain material content. learning about Sociology at high school level. Apart from that, students who are currently very familiar with the presence of the internet and Android smartphones will find it easier to access and study material. Therefore, this study aims to develop innovative learning media products in the problem-based learning e-module format for Sociology subjects that are suitable for use as media during learning activities, after which it is hoped that the products to be developed can become innovations in efforts to improve attitudes student social.

2. METHOD

This research is a type of research and development (R&D). This research and development will adapt the 4-D design or development model, 4-D has the meaning of Define, Design, Develop, and Disseminate (Trianto, 2010). This model was adopted in order to accommodate research objectives,

namely to develop a problem-based learning e-module product that is suitable for use in the sociology learning process. However, this study will focus on presenting data regarding product feasibility assessments that are validated by each research sample. The subject of this research consists of several elements, namely experts and practitioners. Experts consisted of media expert validators (2 people), material expert validators (2 people), while the practitioners selected in this research were sociology subject teachers, totalling 3 people, so that the total sample in this research consisted of 7 people. The data collection technique used is a non-test technique with the data collection instrument, namely the e-module feasibility validation questionnaire (Sugiyono, 2018). The questionnaire used adopts a tiered questionnaire according to Likert 1 – 4, which consists of Very Less, Less, Good, and Very Good (Chetty et al., 2019). The validity of the instrument used is validated by means of expert judgment, where each instrument is consulted and validated in advance by experts who are competent in their field (Widoyoko, 2018). The instruments used in this research is presented in Table 1 and Table 2.

Table 1. Instrument Validation by Media Experts

No	Aspect	Indicator
1	Software	Easily manageable
		Easy to use and simple
		Can be installed and run on various hardware and software
		Ease of operating the product
		Easy to reuse by students
2	Visual Communication	Communicative
		Navigation availability
		Audio availability
		Availability of supporting visuals
		Animation availability

Adapted from (Perdana et al., 2021; Rejekiningsih et al., 2021)

Table 2. Instrument Validation by Material Experts and Teachers

No	Aspect	Indicator
1	Learning	Material Suitability
		Appropriateness of the concept of the material presented
		Material contextuality
		Depth and completeness of the material
		The level of ease in understanding the material
		Clarity of discussion
		Appropriate Exercise with the material
		Material can be studied over and over again
		Media content and materials motivate students to learn

Adapted from (Sari et al., 2021; Ningtyas & Jati, 2018)

Various data obtained from the validation results of media experts, material experts, and teachers will be analyzed descriptively using percentages to determine the level of feasibility (Abdullah, 2015). Table 3 is a form of e-module product eligibility criteria and categories that have been adapted to the needs of this research.

Table 3. E-Module Eligibility Criteria

No	Percentage	Qualification	Declaration
1	82 – 100%	Very Good	Very Eligible
2	63 – 81%	Good	Eligible
3	44 – 62%	Enough	Less Eligible
4	25 – 43%	Less	Not Eligible

Adapted from (Arikunto, 2010; Pratiwi et al., 2021)

The research procedures carried out focus on the process of product design and development. Where the design will bring up an initial product which is then validated by media experts, material

experts, and teachers then analyzed the scores obtained and product revisions are carried out if comments are found from each assessor, in order to improve the quality of the product being developed so that it is in accordance with the level of feasibility and can be into learning media products that are suitable for use during learning activities. Figure 1 is a brief flow of research and development procedures carried out in this study with an emphasis on the design and development process.

Figure 1. E-Module Product Assessment Procedure

3. RESULT AND DISCUSSION

Results

In this research, the focus will be on the design and development stages. Meanwhile, the define stage has been carried out in a scientific paper that has been presented by the author. So that if it is conveyed repeatedly, it will violate the ethics of writing scientific papers, therefore briefly for the define stage it is explained that the use of learning media and teaching materials used tends to be limited and less innovative. It is unfortunate that digital technology, be it smartphones, laptops, computers, cannot be optimized to support the learning process that has been going on all this time. The presence of innovations using ICT-based materials in the form of electronic books or e-modules can be an alternative to be used during the learning process, with the hope that it will make it easier for students to achieve the competencies needed in the 21st century. Meanwhile, the disseminate stage which contains trials for students as potential media users and to see the level of effectiveness of the product, cannot be carried out considering that until now researchers are still in the process of developing instruments to measure students' social attitudes so it is with a heavy heart that this research has not reached to disseminate stage.

Referring to the brief findings from the results of the preliminary study, it was identified that schools currently need ICT-based innovative teaching materials in e-module format. This is expected to provide a stimulus to improve students' social attitudes, so that in addition to achieving learning outcomes, there are other competencies such as the ability of students' social attitudes which will become one of the learning outcomes. From the results of the preliminary study, an idea emerged for the development of an innovative product suitable for use as a learning medium. As the research objective, namely a problem-based learning e-module for Sociology subjects in high school. In the results of this section, the results of the assessment and product development will be presented. The test phase was carried out in accordance with the research flow, namely the validation test by media experts, material experts, and subject teachers. After the questionnaire containing the e-module product feasibility assessment items was distributed to each assessment, Figure 2 are the results of the e-module product assessment by media experts.

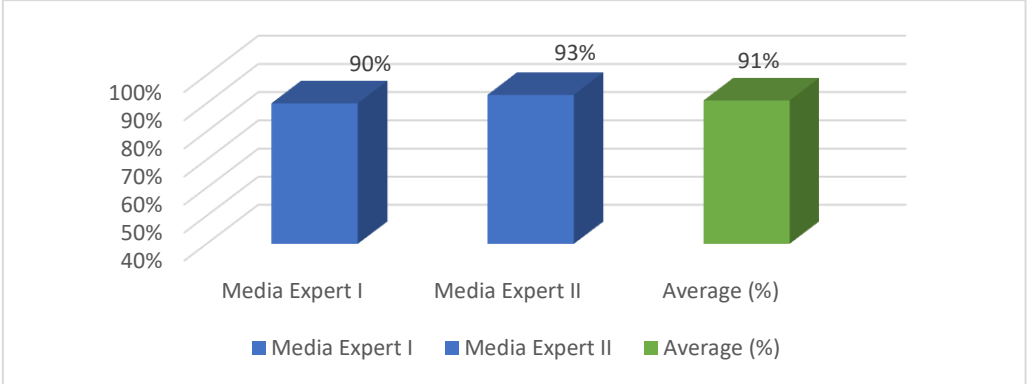

Figure 2. Results of Assessment by Media Experts

Looking at the illustration above, it can be seen that the E-Module product obtained a total rating from media expert I of 90%, this result is included in the 'very good' qualification, then the results of the assessment by media expert II obtained a total score of 93% which is included in 'very good' qualification. The results of the two media experts were then analyzed on average, it was found that 91% were the results of the average analysis of the two assessments, which were included in the qualifications of 'very good' and obtained a decision of 'very decent'. Thus, these results indicate that the components that make up the e-module product have met the requirements as learning media from the perspective of media experts. Figure 3 is the result of the material expert's assessment.

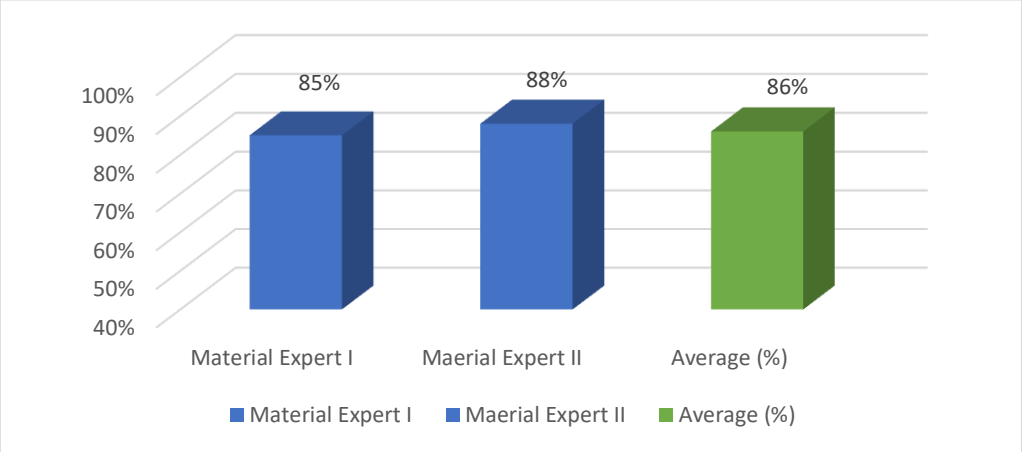

Figure 3. Assessment Results by Material Experts

It was identified through the picture above that the E-Module product obtained a total assessment from material experts I was 85%, this result was included in the 'very good' qualification, then for the results of the assessment by material experts II obtained a total score of 88% which was included in the qualification ' very good'. The results of the two material experts were then analyzed on average, it was found that 86% were the results of the average analysis of the two assessments, which were included in the qualifications of 'very good' and obtained a decision of 'very decent'. Thus, the information or material contained in these products is in accordance with the competency needs, the level of actuality and factuality of the material so that it does not conflict with the student's knowledge structure or the curriculum that applies nationally. The results of the subsequent assessment are from the sociology subject teacher. The following are the overall results obtained from the assessment by each subject teacher. These are illustrated in Figure 4.

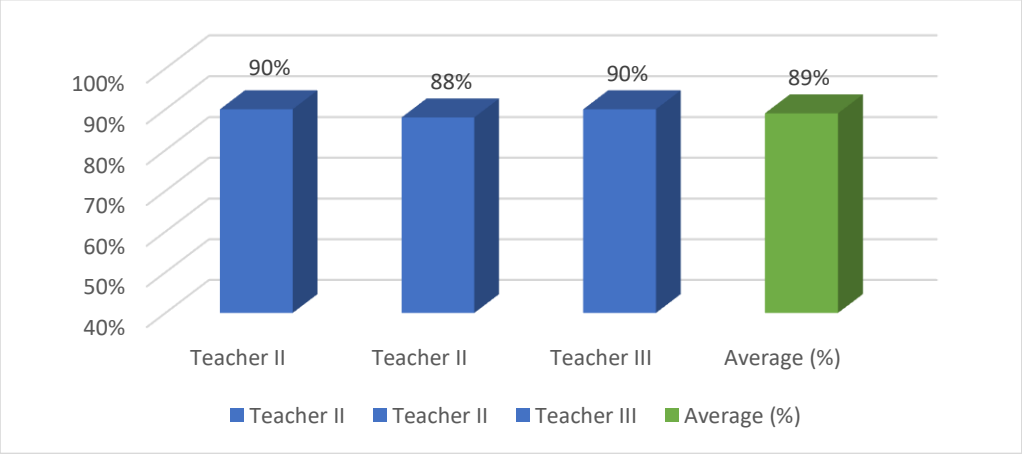

Figure 4. Assessment Results by Subject Teachers

From the Figure 4, it was identified that teacher I gave a total assessment of 90% which was included in the 'very good' qualification, then for teacher II received a total assessment of 88% which included in the 'very good' qualification, and teacher III who received a total assessment of 90% and is included in the 'very good' qualification. The results of the three teachers were then analyzed on average,

it was found that 89% were the results of the average analysis of the two assessments, which were included in the qualifications of 'very good' and obtained a decision of 'very decent'. Thus, the information or material contained in these products is in accordance with the needs of competence, ease of use, actuality and factuality of the material so that it does not conflict with the implementation of the national curriculum and learning. So, as a whole it can be decided that the e-module product is included in the 'very feasible' category by all validators as a sociology learning medium in high school and has the right to be tested on students.

Discussion

From the results of this research, it was answered that the e-module product being developed was feasible to be tested on students and used for Sociology learning in high schools. A learning product, is obliged to measure and test its product so that it is known whether it is appropriate or not at least by media experts, material experts and teachers as learning practitioners (Roemintoyo et al., 2022; Anggraini & Eddy Sartono, 2019). The results of the validator's assessment show that these results cannot be separated from the components of the e-module media product. Some of these components are based on the results of the needs analysis, have elements of motivation, usability, interactive features and can convey information other than text, the availability of videos, images and audio will be able to attract students' attention (Yulando et al., 2019; Fahmi et al., 2021; Agus Kurniawan & Luthfiah, 2021). So that instructional products in the form of e-modules are developed according to the needs of students (Oksa & Soenarto, 2020; Widya et al., 2021; Zhampeissova et al., 2020).

As an innovative form of learning activities in the digital era, digital teaching materials can also be integrated with various approaches, such as research who stated that digital teaching materials in the format of electronic modules can be integrated with the guided inquiry learning model, where the results of the research show that the product developed is included in the appropriate category for use as learning media, and is proven effective in improving student learning outcomes (Handayani et al., 2021). Another study succeeded in integrating e-modules with a contextual-based learning approach, which turned out to be after going through a series of validation processes for material experts, media experts, teachers, students and language experts to obtain appropriate categories to be used as media for learning activities, which empirically proved to contribute in increase student learning interest (Susanti et al., 2020). Besides that, looking at the development of information technology that is currently underway, teaching material products in digital formats that are being developed can be one of the innovations to support and facilitate students during the learning process, given that currently students are familiar with ICT devices and the existence of smartphones that are easy to use. discovered by students and teachers (Yusniza Binti Mohamad Yusof, 2019; Qodr et al., 2021; Hanif et al., 2018). Some research results show that the existence of digital technology cannot be separated from aspects of education, especially learning, it can be seen that the existence of digital teaching material products that are intended to support the learning process, has an impact and contributes positively to the achievement of student learning outcomes, therefore this research It is very important for teachers to be able to accept the existence of technology in the learning process (Har et al., 2019; Rahiem, 2020; Wahjusaputri et al., 2020).

Currently the use of digital teaching materials in various formats such as e-modules that are implemented in various subjects has been proven to be able to increase student academic achievement (Maharani Zan & Mardian, 2022; Pratiwi et al., 2021; Hadianto & Festiyed, 2020; Budiaman et al., 2021). Some research also says so, one of the innovations in science learning can be done through the development and use of digital teaching materials that are packaged in an electronic module format, where this product has succeeded in obtaining the results of an assessment by experts according to standards for use during the learning process, and in its implementation it is proven to be able to improve thinking skills critical students at the upper secondary education level (Latifah et al., 2020). In addition, other research succeeded in revealing that digital teaching materials in electronic module format were proven to be able to improve students' ability to understand abstract material, the factors mentioned contributing to this were that the designs and components contained in electronic module products consisted of text, images, symbols, videos, and animated representations where together some of these components tend to make it easier for students to understand abstract material (Resita & Ertikanto, 2018). From the findings and various previous studies, it appears that e-modules can be integrated with various approaches, besides that the use of e-modules in learning is also proven to be able to improve student learning outcomes, both in the cognitive, affective and psychomotor fields (Fahmi et al., 2021; Sariyatun et al., 2021). From these results, it is hoped that through the results of this product it can be implemented for sociology learning which then has implications for increasing students' social attitudes as one of the learning outcomes. Overall, the learning product in the form of digital teaching materials is very good and deserves to be an innovation, considering that during the development process it has been

adapted to the needs of the field, where some of the main advantages and benefits that students will get if using this product are facilitating the independent learning process, the format for presenting the material attractive and interesting, friendly adaptive to the development of information technology because teaching materials can be accessed independently on digital devices such as smartphones for each student and teacher (Shoraevna et al., 2021; Criollo-C et al., 2021; Sert & Boynueğri, 2017; Camilleri & Camilleri, 2017), This will of course be different if the teaching materials used are still limited to printed materials. Besides that, this research also succeeded in identifying various benefits from the application of media in digital format, namely e-modules to support the learning process (Erianti et al., 2022; Albana & Sujarwo, 2021), as the inherent benefits when teachers use digital media such as focusing student attention, increasing overall interaction, and can be a student facility for the learning process independently (Lavrenova et al., 2020; Hussin, 2018; Handayani et al., 2021).

The results of this research in the form of an interactive media product based on Android were declared feasible by media experts, material experts and teachers and could be an innovation to be applied to the learning process, especially for geography subjects to form students' environmental care attitudes. However, this research is still limited to assessing the feasibility of Android-based interactive media for geography learning, not to user trials and testing the effectiveness of media products. Therefore, further trials are still needed, both to determine the practical level of use by students, as well as to find out the level of effectiveness of this Android-based interactive media product in increasing students' environmental care attitudes, as one of the learning outcomes included in the affective aspect.

4. CONCLUSION

The purpose of this research is to develop an innovative learning product, in an e-module format for sociology learning. The results of this research succeeded in showing that as a learning innovation product, the e-module that was developed was included in the appropriate category as a learning media. From the results of this research, it is also indicated that the integration between learning materials and ICT-based learning media will be able to create a dynamic and interactive learning environment. It is very important for educational institutions to appeal to educators to have an open mind and attitude towards the presence of technology and then integrate it into learning activities. Suggestions for future researchers are to develop e-module products into various subjects, and be able to apply them to learning practices to measure the impact of the developed e-module products, thus it is hoped that students will be given convenience in accessing learning materials both collaboratively and access material independently.

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