

Enhancing Pancasila Education through Differentiated Learning: The Role of E-Modules Developed with Flip PDF Professional

Septiana Dewi¹, Alfiandra², Sani Safitri³

¹ Universitas Sriwijaya, Palembang, Indonesia; septianadewi0902@gmail.com

² Universitas Sriwijaya, Palembang, Indonesia; alfiandra@kip.unsri.ac.id

³ Universitas Sriwijaya, Palembang, Indonesia; sani_safitri@kip.unsri.ac.id

ARTICLE INFO

Keywords:

Electronic Module;
Differentiated Learning;
Flip Pdf Professional

Article history:

Received 2024-05-14

Revised 2024-08-21

Accepted 2024-11-01

ABSTRACT

This study addresses the need for high-quality, flexible learning materials in Indonesia's independent curriculum, focusing on differentiated learning strategies to enhance student motivation in Pancasila Education. The objective is to develop and validate differentiated learning-oriented electronic modules (e-modules) using the professional Flip PDF application to boost student engagement and motivation. The Research and Development (R&D) method was applied using the Rowntree model, which includes three phases: planning, development, and evaluation. The study was conducted at SMA Negeri 1 Indralaya Utara, where the e-modules were created to align with differentiated learning principles in content, process, and product design. Validation was conducted through walkthroughs by three experts: a content expert, a media expert, and a linguist. The analysis demonstrated that the developed e-modules were valid, practical, and effective in fostering student motivation. The modules adhered to learner-centered principles, incorporating various elements to meet the needs of differentiated instruction. Experts verified the content quality, usability, and linguistic clarity of the modules. These findings indicate that using differentiated, e-module-based learning materials significantly impacts students' motivation by providing interactive and visually appealing resources aligned with learning objectives. The professional Flip PDF application allowed systematic and engaging content delivery, contributing to improved motivation and learning outcomes. The study successfully developed validated e-modules that enhance student motivation and engagement. Future research could further explore differentiated e-modules across various subjects to support diverse learning needs and optimize educational outcomes.

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Corresponding Author:

Alfiandra

Universitas Sriwijaya, Sumatera Selatan, Indonesia; alfiandra@kip.unsri.ac.id

1. INTRODUCTION

Education is a fundamental pillar of human development, essential for fostering knowledge, intellect, integrity, and moral character. It equips individuals with the skills needed to thrive personally and contribute meaningfully to society. As Ki Hajar Dewantara articulated, the goal of education is to nurture children's potential to its fullest, enabling them to lead safe, prosperous lives as both individuals and members of the community. In Indonesia, Pancasila Education plays a crucial role in instilling these values, shaping responsible citizens aligned with national ideals. Differentiated learning strategies are increasingly important in meeting diverse learning needs and enhancing engagement in Pancasila Education. This study explores how e-modules created with Flip PDF Professional can support differentiated learning, providing an adaptable, engaging, and student-centered approach that can enrich the teaching and learning experience in Pancasila Education.

Currently, differentiated learning is in the spotlight in the world of education, which relies on the diverse potential of learners. Differentiated learning is essentially learning that views learners as different and dynamic, so schools must have a plan for differentiated learning. Differentiated learning is any effort to adjust the learning process in the classroom to meet the learning needs of each learner (Tomlinson et al., 2003). Through differentiated learning, teachers have the opportunity and freedom to be able to explore further in the preparation of learning tools, especially teaching materials that are tailored to the needs, interests, and learning styles of students during the learning process in diverse classrooms. If this diversity is not well directed, it can certainly have an impact on the achievement of learning objectives.

There are four aspects of differentiated learning that educators must apply, namely content, process, product and environment or learning climate in the classroom. This is in line with what is conveyed by (Andini, 2016) that differentiated learning uses a multiple approach to learning in content, process and product. Educators can implement these four aspects into classroom learning in each class based on the profile, interests and talents of students. In differentiated learning, educators teach materials by considering the level of readiness, interests, and learning styles of learners by changing the content of lessons, learning processes, products or learning outcomes taught, and the learning environment of learners without changing the objectives of learning.

Along with the development of the globalization era, Information and Communication Technology (ICT) has the potential as a tool or means to develop knowledge and skills in the learning process. Especially in developing one of the important elements in learning, namely teaching materials. One form of teaching material is an electronic module (e-module) that can attract students' interest and make it easier for students to access various materials to be learned. E-Modules (electronic modules) are teaching materials that are used and presented systematically in accordance with differentiated learning.

To align with national education standards and effectively work toward national education goals, educators must create engaging, dynamic learning experiences that maintain students' interest and motivation. A monotonous or uninspiring learning process can negatively impact students' enthusiasm and motivation to learn, ultimately hindering educational outcomes (Meşe & Sevilen, 2021; Afrinanda Pratiwi & Yanti Fitria, 2022). One effective strategy for countering disengagement is through the use of e-modules designed with differentiated learning in mind. Differentiated e-modules allow educators to tailor content, processes, and learning outcomes to accommodate diverse student needs, fostering a more personalized and inclusive educational experience. By integrating technology into the classroom through interactive e-modules, educators can create visually appealing, accessible, and flexible learning resources that encourage student engagement and active participation. This approach not only enhances motivation but also supports students' varied learning styles, ultimately contributing to a deeper understanding and greater achievement of educational goals.

The subject of Pancasila Education is compulsory at every school level up to college. Given that this subject is a compulsory subject, it is very important to maximize the learning process. One way to maximize the learning process is by developing e-modules (electronic modules) that are oriented towards differentiated learning.

The development of e-modules oriented to differentiated learning is designed with the help (software) of the professional flip pdf application. In this application, there are very interesting features, so that when learning takes place students do not feel bored and bored. One of the advantages of this software is that it can make PDF files more attractive, like a book and this software contains various elements such as text, images, animations, videos, links and sounds that become a unified presentation that can be applied offline (Wibowo & Pratiwi, 2018).

This research builds on previous studies (Puspitasari et al., 2020; Sanjaya, 2022; Ekaningtiass et al., 2023) that focus on developing e-modules oriented toward differentiated learning. These studies produced e-modules as learning tools designed to cater to diverse student learning styles, demonstrating that differentiated e-modules can enhance students' motivation and learning outcomes. However, the current study differentiates itself by developing e-modules using the Flip PDF Professional application, which offers engaging features and a structured presentation of teaching materials aligned with differentiated learning principles. This approach aims to create e-modules that not only increase students' interest and motivation but also support varied learning paths and help achieve educational objectives more effectively.

The use of differentiated learning-oriented e-modules reflects the growing awareness of the need to address diverse student abilities and learning preferences, emphasizing the importance of tailored educational resources in enhancing motivation and engagement. These e-modules are specifically designed based on an analysis of students' needs and potentials, ensuring alignment with various learning types and styles. This approach is especially relevant as differentiated learning practices are still relatively new in many educational contexts, where teaching tools that cater to diverse needs remain limited, and existing materials often fail to fully engage students. Recognizing that each student possesses unique abilities, teachers are tasked with facilitating independent learning and guiding students toward achieving their educational objectives. Differentiated learning serves as a strategic framework for accomplishing these goals, providing a pathway to develop engaging, effective instructional materials that foster motivation and improve learning outcomes.

2. METHODS

The research method employed in this study is Research and Development (R&D), a process-oriented approach designed to create or enhance products, whether software or hardware (Sugiyono, 2019). This study follows the Rowntree model of development, which comprises three key phases: planning, development, and evaluation.

The first phase, the planning stage, involves a needs analysis to identify specific requirements for the product to be developed. This stage collects relevant information about the intended e-module through interviews with Pancasila Education teachers for Grade XI, providing insights into the educational needs and content requirements for effective learning in this subject area.

The second phase, the development stage, focuses on creating the e-module itself, oriented toward differentiated learning for Pancasila Education in the high school setting. This phase translates the initial design into a tangible product, integrating multimedia elements such as text, images, videos, and audio, all facilitated by the Flip PDF Professional application. The goal is to produce an engaging and interactive e-module in electronic form that caters to diverse learning preferences and supports the differentiated learning framework.

The final phase, the evaluation stage, involves a rigorous formative evaluation using the Tessmer model, which includes several steps: self-evaluation, expert review, one-to-one testing, small group testing, and a field test (Yoto et al., 2015). During self-evaluation, the researcher conducts an internal review to refine the product before involving external evaluators. In the expert review, material, media, and language experts assess the module's validity and provide feedback on its content quality, instructional design, and language clarity. Validation at this stage uses a walkthrough method, with a validation sheet tailored to assess specific indicators relevant to the module. This expert input helps to ensure that the e-module meets educational standards and is engaging for students. Subsequent phases include testing with individual students, small groups, and finally, in a classroom setting to refine the product based on real-world feedback, thus ensuring it is effective, relevant, and user-friendly. The insights gathered at each evaluation step guide iterative improvements, creating a high-quality, differentiated e-module ready for use in Pancasila Education.

Table 1. Product Validity Level Categories (Wiyoko, 2016: 112)

Average Answer Score	Validity Classification
>4.2 up to 5.0	Very Valid
>3.4 up to 4.2	Valid
>2.6 up to 3.4	Less Valid
>1.8 up to 2.6	Invalid
1.0 up to 1.8	Highly Invalid

After being tested for validation and revised according to suggestions and criticisms by the validator, then proceed with the one-to-one evaluation stage by testing the differentiated learning-oriented e-module on three students with high, medium, and low knowledge level categories selected by the Pancasila Education subject teacher who teaches in the class. The instrument used is a questionnaire to answer matters related to the use of e-modules oriented to differentiated learning in the learning process. The purpose of this stage is to see the practicality of using differentiated learning-oriented e-modules. After being declared practical through the one-to-one evaluation stage, the differentiated learning-oriented e-modules were tested again at the small group evaluation stage on six students who were given learning using differentiated learning-oriented e-modules. After that, students were given a questionnaire with related indicators after the use of differentiated learning-oriented e-modules. The purpose of this stage is to reconfirm the practicality of using differentiated learning-oriented e-modules.

Table 2. Product Practicality Level Categories (Wiyoko, 2016: 112)

Average Answer Score	Practicality Classification
>4.2 up to 5.0	Very Practical
>3.4 up to 4.2	Practical
>2.6 up to 3.4	Less Practical
>1.8 up to 2.6	Impractical
1.0 up to 1.8	Very Impractical

After being validated and tested for practicality, then proceed with the field test stage, namely the use of differentiated learning-oriented e-modules in one class of students. The purpose of this stage is to determine the potential effect of using differentiated learning-oriented e-modules on students' learning motivation. The instrument used at this stage is an observation sheet with an observation format containing points on the conditions described by each learner during the learning process.

Table 3. Categories of Learner Motivation Levels (Ridwan, 209: 18)

Percentage	Category
81-100	Very High
61-80	High
41-60	High Enough
21-40	Less
0-20	Very Les

3. FINDING AND DISCUSSION

3.1 *Planning Stage*

3.1.1 *Result of Needs Analysis*

A needs analysis is the essential first step in developing effective teaching materials. In this study, the needs analysis was conducted through interviews with Pancasila Education teachers at SMA Negeri 1 Indralaya Utara. The purpose of these interviews was to identify challenges in the Pancasila Education learning process and to explore opportunities for enhancing engagement and effectiveness in the classroom. Teachers reported that differentiated learning is a relatively new approach in the school, resulting in limited teaching tools specifically designed to accommodate diverse learning needs. Current materials primarily consist of printed books, teaching aids, cardboard, and paper, with educators typically creating resources using Canva but rarely employing interactive digital tools such as e-modules.

The interviews also highlighted challenges, including students' passive engagement when teaching materials lack variety and appeal. Teachers emphasized the need for varied instructional approaches that align with students' individual talents and interests, underscoring the value of differentiated learning. SMA Negeri 1 Indralaya Utara has recently adopted a policy allowing students to use devices such as cell phones for educational purposes, providing an opportunity to integrate digital resources under teacher supervision. This policy supports a more dynamic and interactive learning environment, making digital teaching tools, like e-modules, a feasible and attractive option for enhancing student engagement.

The needs analysis further revealed that students possess varied learning potentials, which requires educators to guide them in becoming more autonomous learners to meet their learning goals. Differentiated learning strategies are instrumental in achieving these objectives, as they provide personalized content that resonates with students' unique interests and abilities. Teachers noted the need for innovative, interactive teaching materials to address student engagement issues and fluctuating learning motivation. To overcome these obstacles, it is essential to adopt teaching materials that support differentiated learning, offering content that meets students' individual needs and preferences.

In response to these insights, this study aims to develop differentiated, engaging e-modules tailored to students' interests and needs. By providing such resources, the research seeks to enhance student participation and motivation, fostering an active and meaningful learning experience in Pancasila Education.

3.2 *Development Stage*

Researchers designed differentiated learning-oriented e-modules starting from creating a cover page design, main menu page consisting of a material menu, instructions, introduction, general information, learning evaluation and glossary. Researchers design materials according to the learning

needs of students by preparing materials in the form of text, images, and videos to match the different learning interests of participants, both visual and audiovisual. Researchers also prepared supporting materials in the form of learning RPS, as well as the Pancasila and Citizenship Education Teacher's Guide book by (Kholiludin et al., 2021) as references used in the preparation of material or lesson content. The final result of this stage is the e-module framework, e-module content and supporting materials used.

At this stage the product is poured into one into a professional flip pdf application which is hereinafter called a prototype. The prototype displayed is already in the form of an electronic module consisting of a cover, main menu, general information, learning readiness mapping and learner learning profile, learning materials that are visual and audiovisual equipped with image, text, sound, and video displays, and there are learning evaluations and assignments. Researchers use the help of the professional flip pdf application to add animation and video to the product design results that have contained the contents of differentiated learning-oriented e-modules and make teaching materials that are attractive and can be used independently anywhere and anytime. At this stage, the product results of differentiated learning-oriented e-modules are called prototypes.

The steps for using the professional flip pdf application are used by researchers in making products, namely the first step is making a new project. Then the researcher clicks "new project" then "browse" and researcher. Select the pdf file of the differentiated learning oriented module to be used in electronic form and finally "import now." Then the researcher edits flipbook project page by clicking "edit pages" at the top of the window professional pdf flip application. On this page there are multimedia features for add or insert text, images, audio, video, animation, links, designs, and create buttons and quizzes on each flipbook page desired. The final step that researchers took in using the Flip application Pdf Professional, namely after finishing editing the flipbook on the "edit pages" page then click "save and exit" in the top right corner, then you will return to the page as in step two. Next is research publish the flipbook in the form of a link to share with students. Then the researcher clicked "convert" then the flipbook was saved and available operated offline on a computer and online on a smartphone as well as computers.



Figure 1. Differentiated Learning Oriented E-Module Display

3.3 Evaluation Stage

After the product development stage, then the evaluation stage of the prototype is carried out. At the evaluation stage, researchers use a formative evaluation test with the Tessmer model which goes through several stages to be carried out, namely self evaluation, expert review, one-to-one, small group, and field test (Yoto et al., 2015).

3.3.1 Result of Self Evaluation

Self-evaluation is a re-examination by the researcher of the initial design of differentiated learning-oriented e-modules that have been developed as a whole so that there are no fundamental errors in the differentiated learning-oriented e-modules developed. Based on the Self Evaluation conducted by researchers on this differentiated learning-oriented e-module, it was found that there were several errors and shortcomings such as text writing, unclear image display, and inappropriate use of colors. Then, the researcher corrected the errors and deficiencies that had been found. Then improvements were made to the errors and deficiencies contained in the differentiated learning-oriented e-modules. The self-evaluation identified errors such as unclear text, inappropriate image displays, and color issues. These were corrected to improve the overall quality of the e-modules.

3.3.2 Result of Expert Review

This stage is a stage to assess the validity of differentiated learning-oriented e-module teaching materials that have been developed by researchers. There are three aspects that are the focus of the validation assessment, namely material, media, and language, which are validated by validators: material experts, media experts, and language experts.

Table 4. Recapitulation of Expert Validation Results

No.	Validation Aspect	Grade Recapitulation
1.	Content/material	4,5
2.	Media	4,6
3.	Language	4,0
	Average	4,35
	Category	Very Valid

3.3.3 Result of One-to-One Evaluation

This stage aims to assess the practicality of the differentiated learning-oriented e-modules and to review the expert validation feedback on the developed product. During the one-to-one evaluation phase, three Grade XI students with varying ability levels—low, medium, and high—were involved to provide diverse perspectives on the module's usability and effectiveness.

Table 5. Recapitulation of the Results of Learner Responses at the One-to-One Stage

No.	Students	Score
1.	AA	58
2.	FR	64
3.	NAS	63
	Sum	185
	Average	4,1
	Category	Practical

3.3.4 Small Group Evaluation Result

In the small group evaluation stage, researchers tested the differentiated learning-oriented e-module called prototype 2 in a small group of students in class XI.1 at SMA Negeri 1 Indralaya Utara

involving six students. The learners were selected based on academic ability, namely two people with high academic ability, two people with medium academic ability, and two people with low academic ability. The selection of the six learners was obtained from the suggestion of the Pancasila Education teacher who taught the class.

Table 6. Recapitulation of the Results of Learner Responses at the Small Group Stage

No.	Students	Score
1.	GN	67
2.	MRF	60
3.	CS	61
4.	LA	66
5.	PR	68
6.	MKA	57
Sum		380
Average		4.2
Category		Practical

3.3.5 Result of Field Test

In the field test stage, researchers worked with the entire XI.1 class, consisting of 38 students, in the Pancasila Education learning process using e-modules designed for differentiated learning. This phase included two sessions. In the first session, students were asked to prepare their mobile devices, and the researcher shared a link to the differentiated e-modules. Once all students accessed the link, the researcher outlined the learning objectives and organized students into groups based on their learning preferences: audiovisual, visual, and kinesthetic. The session proceeded with students engaging with the e-modules in a way that suited their individual learning styles.

In the second session, students were again grouped according to their preferred learning styles, and the researcher briefly reviewed the material from the previous session before continuing with the differentiated e-module activities. This session reinforced learning and allowed students to further explore the material in alignment with their learning preferences.

To assess the impact of differentiated e-modules on student motivation, the Pancasila Education teacher observed and recorded students' engagement levels using an observation sheet provided by the researcher. The results indicated that student motivation was high, with 78% of students showing strong motivation in the first session, which increased to 82% in the second session. The average motivation score was 80%, categorized as high. Specifically, 18 students demonstrated very high motivation, while 20 showed high motivation. This positive response suggests that differentiated e-modules effectively enhance engagement by catering to varied learning interests, making the learning process more appealing and suited to students' needs.

Discussion

The study found that the differentiated learning-oriented e-modules in Pancasila Education are valid, practical, and effective in enhancing student learning motivation. Based on research that has been conducted by researchers, the results show that the level of achievement of the assessment of differentiated learning-oriented e-modules in Pancasila Education subjects obtained very feasible and very valid criteria after going through the validity process by material experts, media experts and linguists who obtained a score of 4.5 from material expert validators with a very valid category, 4.6 from media expert validators with a very valid category, and 4.0 from language expert validators with

a valid category. This shows that the content of the material, design and media, and language of this differentiated learning-oriented e-module product meets the criteria for feasible use by students, but there are still suggestions and improvements that need to be improved and added to several parts of the differentiated learning-oriented e-module. This is in line with research (Kencana et al., 2024), which states that a product is declared feasible when it meets the criteria from the aspects of learning content, design and learning media. This is also in line with the opinion (Rahmawati et al., 2022), which explains that the validity of teaching materials is feasible to use to support learning.

The research conducted by this researcher also obtained the results that the differentiated learning-oriented e-module developed was practical for students to use in the learning process. This is evidenced by the results of students' responses to all aspects of the students' response questionnaire sheet which shows a positive response to the use of differentiated learning-oriented e-modules and obtained a score of 4.1 at the one-to-one evaluation stage with a practical category and 4.2 at the small group evaluation stage with a practical category. This shows that differentiated learning-oriented e-modules meet the criteria as practical teaching materials to be used in the learning process. This is in line with research (Susilowibowo et al., 2016), which also developed e-module teaching materials that obtained very practical criteria, therefore, e-modules are suitable for use in the learning process.

The use of this differentiated learning-oriented e-module in learning can increase student learning motivation in Pancasila Education subjects. This is evidenced by the results of observations made during the learning process using e-modules oriented to differentiated learning which obtained results at the first meeting of 78% with a high learning motivation category and at the second meeting obtained an assessment of 82% with a very high category so that an average of 80% was obtained with a high learning motivation category. This shows that this differentiated learning-oriented e-module has a potential effect on students' learning motivation. This is in line with the opinion (Iskandar, 2021) which states that differentiated learning is believed to improve student learning outcomes. In addition, research (Bendriyanti et al., 2022) also found that maintaining differentiated learning can improve the quality of students' learning. As for the research conducted by this researcher, the results show that implementing differentiated learning-oriented learning can increase students' learning motivation in participating in the learning process because learning is carried out with content, processes and products that are tailored to the interests and learning needs of students so that students are motivated to follow the learning until the end.

The differentiated learning-oriented e-module developed in this study features an attractive, user-friendly design, thanks to the professional Flip PDF application. This aligns with findings by Ellysia et al. (2021), which showed that e-modules created with Flip PDF Professional were rated as highly engaging and effective for use in educational settings. Similarly, Rahmawati et al. (2022) found that modules designed for digital platforms provide a more appealing and practical presentation, enhancing students' learning experience. Additionally, as noted by Ricu Sidiq and Najuah (2020), the integration of advanced technology in module design boosts students' enthusiasm, making the learning process more engaging and motivating.

The findings from this study suggest that differentiated learning-oriented e-modules are a powerful tool in enhancing student engagement and motivation in Pancasila Education. By tailoring content, processes, and products to meet students' diverse learning needs and preferences, these modules foster an environment where students are more actively involved and motivated to learn. This effect is reflected in the high and very high motivation ratings observed across learning sessions, demonstrating that the individualized approach of differentiated learning taps into students' interests and creates a more meaningful and enjoyable learning experience. Such results support the idea that differentiated learning, combined with engaging digital formats like e-modules, is effective in meeting the goals of contemporary education, where student-centered learning is a primary focus (Iskandar, 2021; Bendriyanti et al., 2022).

Additionally, the study highlights the value of integrating technology, such as the Flip PDF Professional application, into the design of learning materials to enhance their practicality and appeal. Students responded positively to the e-module's format and structure, indicating that digital features like interactive visuals and multimedia elements help to sustain their interest and facilitate understanding. These findings align with previous research (Susilowibowo et al., 2016; Ellysia et al., 2021), confirming that e-modules offer a practical and effective alternative to traditional learning resources. For future research, it would be beneficial to explore the application of differentiated e-modules in other subjects and across varied educational settings to broaden their impact and adaptability. Expanding the use of differentiated e-modules can further strengthen the connection between student motivation and tailored learning, advancing the quality of education in diverse classrooms.

4. CONCLUSION

In conclusion, this research demonstrates that the differentiated learning-oriented e-modules developed for Pancasila Education are valid, practical, and positively impact students' learning motivation. Validation results from three experts—content, media, and language—showed high scores, with material validation averaging 4.5 (very valid), media validation averaging 4.6 (very valid), and language validation averaging 4.0 (valid). The practicality of the e-modules was also confirmed through testing, with one-to-one evaluations scoring 4.1 and small-group evaluations scoring 4.2, both categorized as practical. Observational data from the field test indicated an 80% increase in students' learning motivation, categorized as high, supporting the modules' potential effect. These e-modules meet differentiated learning elements by focusing on learner-centered content, processes, and products. The study's implications highlight the effectiveness of integrating digital resources that cater to diverse learning needs, enhancing student engagement and motivation in a structured, learner-centered format. However, limitations exist, as the modules were tested in a single subject area and could benefit from further refinement in design elements, word choice, and visual appeal. Future research could extend the use of differentiated e-modules across various subjects, with improvements in content depth and presentation quality, to maximize their effectiveness in diverse educational contexts.

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