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Effectiveness of Mathematical Learning Module in Community Education Unit

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ABSTRACT

Purpose: This study aimed to find the problems regarding the effectiveness of mathematics modules on students' learning outcomes in Community Education units. The study focused on three aspects: the design of the learning modules, the results of expert validation, and the implementation or application of the modules. **Method:** This research relied on a model consisting of three steps: exploration, empirical test, and implementation. All data was derived from observation notes, questionnaires, document studies, and tests. The sample comprised leaders, managers of learning programs, and students of the Package C equivalency education program. The sample was divided into two groups with 20 participants in each education unit. All quantitative and qualitative data were descriptively analyzed. **Findings:** The results revealed four components of the learning modules: input, process, output, and outcome. All of these four components were significant and relevant to the learning activities. The field test results reported that the learning modules were effective, as the t-test signifies a difference between the average score of the pretest and posttest. **Implications to Research and Practice** The findings of such research can function as a prototype for developing other modules, ensuring quality education for all people who need an equivalency program that is on par with regular educational institutions. This study concludes that systematical evaluation, quantitatively and qualitatively, results in feasible and reliable mathematics learning modules for Packet C equivalency programs.

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Introduction

National education schemes are deliberate and systematic efforts undertaken by a country to nurture and cultivate the full potential of its citizens. Its primary goal is to equip individuals with the necessary knowledge, skills, and attitudes essential for personal development and societal progress. The comprehensive scope of national education encompasses various aspects of human life, encompassing academic, vocational, and life skills, as well as fostering values, ethics, and citizenship. As a part of the Association of Southeast Asian Nations (ASEAN), Indonesia has been committed to promoting and ensuring quality education for all its citizens. Recognizing the crucial role of education in the overall development and advancement of a nation, Indonesia has implemented several structured programs to address various educational challenges and improve the educational landscape across the country (Chan, 2020; Saragih, 2017; Sulfemi, 2019). As a planned and programmed program, all matters related to the process and implementation of educational activities need to be carried out properly according to applicable regulations and norms.

The success of the educational process and its impact is a shared responsibility between families, communities, and the government. Families and parents should not assume that education is only the responsibility of formal educational institutions (schools). This means synergistic cooperation is needed to realize the main objectives of educational activities to provide productive benefits for people's lives. At the level of implementation of national education, educational activities comprise three services: informal, formal, and non-formal. These three forms of educational services are integrated, continuous program to realize the development of the quality of human resources holistically. Normal education, also known as community education or non-formal education, is a crucial sub-system within the broader educational landscape. Unlike formal education that takes place within traditional schools, normal education serves educational activities outside of formal schooling environments. Its primary focus is on facilitating learning experiences that lead to changes in knowledge, attitudes, skills, and social actions at both individual and group levels (Sudiapermana, 2021).

Literature Review

There is no dearth of studies on community education playing a strategic role in designing pathways for educational institutions (Isa & Zubaidi, 2022; Yustialti, Hamdan, & Herwina, 2018). These studies have discussed role and actualization of its various programs carried out as a manifestation and implementation of lifelong education. These studies have unanimously agreed that community education services are expected to reach all dimensions of human life, regardless of conditions and characteristics (time, age, gender, race, ethnicity, heredity, socio-culture, and religious backgrounds). This educational approach highlights an impactful effort to improve nations' quality in future.

Community education also has its characteristics and targets where the programs include literacy education, early childhood education, life skills education, youth productivity development, women empowerment, skills education and job training, equivalency education, and other programs relevant to developing students' potential, character and skills in a specific setting and goal (Isa & Anu, 2021; Sudiapermana, 2021). The target of community education services covers varied layers of society, ranging from courses, training institutions, learning activity center, study groups, Community learning activity centers, and taqlim (Islamic education) forum.

The Package C equivalency education program is a crucial component of the community education strategy, designed to offer an alternative pathway to education for individuals who, for various reasons, cannot attend or complete high school through the regular formal education system (Isa & Anu, 2021; Sudiapermana, 2021). It aims to provide these individuals with an opportunity to obtain an equivalent level of education and qualifications, ensuring they have access to learning and skill development that can positively impact their personal and professional lives. At the operational level, the community can organize equivalency education programs (relevant social institutions and organizations). The Package C equivalency is central to meeting learning needs, thus ensuring equitable access to education to optimize the success of the compulsory primary education program.

Yustialti et al. (2018) asset that, in the implementation of the equality education program, the establishment of suitable facilities is essential to ensure the quality of education provided it meets the expected targets. These facilities play a crucial role in addressing various challenges faced by learners, making education more accessible and accommodating to their specific needs and circumstances. Some of the key issues that a well-equipped facility can help overcome include poor educational background, limited space for learners to pursue equivalent diplomas, and the demands of work or other commitments that learners might have. Activities of the Package C equivalency program learning management systems are the same as learning in school education. This is done by considering the applicable learning management principles and procedures. Preliminary studies conducted and supported by empirical facts obtained data and information that in general, two factors influence the low motivation of students in mathematics: internal and external (teacher) factors. While referring to internal factors, which are contingent upon the satisfaction of their requirements for competency, self-governance, and interpersonal connection (Sudiapermana, 2021).

Heyder et al. (2020) refers to student motivation and ignorance about the benefits of learning mathematics, resulting in boredom during class, as well as the lack of feelings of competence. External factors, on the other hand, refer to Package C learning educators or tutors, which are driven by the results the task will bring such as fame, grades, and recognition from peers, teachers, and parents (Tsai, Lin, & Lin, 2017). Teachers as learning facilitators, should be able to create learning designs (Isa & Anu, 2021); however, the reality is far from expectation, which can be seen from the learning design that has not followed the recommended principles or procedures, so it is not contextual. In addition, the learning process is mechanistic in nature due to the absence of proper learning material to meet learning needs (students ultimately perceive mathematics as not applicable in everyday life) (Husain, 2018).

Achievement of learning outcomes is determined by several factors, and two critical elements that play a vital role in this process are well-organized management and relevant learning models. These factors are crucial in ensuring that the learning process is effective, engaging, and conducive to stimulating students' creative thinking (Setiawati, Netriwati, & Nasution, 2018). In this context, quality learning modules are necessary since these resources facilitate students and educators in the learning process. The learning modules also foster students' learning motivation, facilitate access to actual learning information, and control the process and content based on the curriculum. These learning resources, in turn, ensure the achievement of specified learning competencies (Tsai, Lin, & Lin, 2017).

Hence there was a need to focus on the effectiveness of mathematics modules in community education units. This area of research has been rarely explored, despite its importance in understanding the factors that contribute to quality learning in community education settings. It was also important to investigate this topic to provide valuable insights into the use of modules and their impact on learning outcomes in non-traditional educational contexts. It was also important to focus on the Package C equivalency program, highlighting its commitment to providing quality education to individuals who require an alternative pathway to education. By developing and implementing effective learning modules, it was necessary to ensure that those in community education units receive an education that is at par with regular educational institutions. This is crucial for promoting equal opportunities and inclusivity in education. In summary, by focusing on the effectiveness of learning modules in community education units, a study would contribute to the advancement of educational practices in non-traditional settings, benefiting both learners and educators.

Based on the above discussion, the present study aimed at determining the achievement of learning competencies through modules in community education units, both in learning activity centers and community learning activity centers. Scientific information data were an important component that contributed to the quality of Package C equivalency education program. The process and results of scientific research were accurate inputs in stakeholders' policymaking at institutional management levels and their implementation by educators in the learning context. Problems regarding the effectiveness of mathematics modules on the learning outcomes of students in Community Education units were also the major focus of the present study. It focused on three aspects: the design of the learning modules, the results of expert validation, and the implementation or application of the modules.

As evident in the extant literature, studies on the application of learning modules in other community education units are rarely conducted despite their significance in identifying contributing factors to quality learning. The findings of the current research can function as a prototype for developing other modules, ensuring quality education for all people who require an equivalency program that is at par with regular educational institutions. This research can also be used as reference material for developing scientific studies in the scientific field of public education and as input for stakeholders and practitioners engaged in developing learning models in the Community Education Unit (Learning Activity Center and Center for Community Learning Activity Groups). The output of this research, i.e., the learning modules, can be used in learning service activities, contributing to innovation in Community Education studies, especially the Package C Equivalency program.

Methodology

- *Research Design*

The present study employed the research and development (R&D) methodology, primarily aimed at the creation and validation of educational products. This approach involved a comprehensive analysis conducted through validation procedures and systematic testing, incorporating vital components to ensure the generation of relevant and beneficial results for educational administration. The research was meticulously structured, following a three-step operational process: exploration, empirical testing, and implementation.

- *Research sample*

The sample of the study comprised a diverse set of participants, including leaders, program managers, and students actively engaged in the Package C equivalency education program where the selection of each participant was pre-arranged by the education unit.

- *Research Instrument and Procedure*

The data collection instruments encompassed observations, questionnaires, document studies, and tests, offering a many-sided perspective. Additionally, the trial for the model involved two distinct groups, each comprising 20 participants, strategically chosen from various education units such as Learning Activity Centers and Community Learning Activity Centers.

- *Data analysis*

All collected quantitative and qualitative data underwent meticulous descriptive analysis. The effectiveness of the modules was rigorously assessed through empirical testing to ascertain their feasibility within the proposed model. To gauge the treatment outcomes in the trial group, both pretest and post-test evaluations were conducted using the Wilcoxon match pairs test or the Wilcoxon test, as outlined by Sugiyono (2018). The resulting pretest and post-test data were subject to comprehensive quantitative and qualitative analyses, supplemented by in-depth interviews, discussions, and reflections to extract valuable insights. Furthermore, it is important to note that this study adhered to ethical guidelines and obtained official approval from the Research Committee of Universitas Negeri Gorontalo, with the ethical approval reference number being 1322UN47/BI.KE/2023. This approval underscores the study's commitment to maintaining ethical standards and upholding the integrity of the research process.

Results

The developed module identified for this study contributed to improving student learning outcomes. The present work explored the components of the learning model design as a follow-up to exploratory study activities, the results of expert validation of learning modules, and the implementation of learning modules in the selected Education Unit.

- *Exploration: Design of learning model*

In this stage, a deep dive unfolds into a comprehensive examination of theoretical and empirical studies revolving around learning modules, with a specific lens on applying the learning system cycle. A subsequent table was meticulously crafted to provide an elaborate breakdown of the diverse aspects constituting the learning module. The central objective was to thoroughly explore and analyze the intricate components that composed the learning module, shedding light on their interplay and how they collectively contributed to the learning process. Aligned with this in-depth exploration, the ensuing Table 1 presents an intricate and expansive breakdown of the multifaceted components that make up the learning module. Every aspect of the learning module was subjected to a detailed

examination, aiming to unravel the complexities inherent in the design, implementation, and evaluation of effective learning experiences. This meticulous scrutiny facilitates a nuanced comprehension of how these diverse elements intricately intertwine to form a cohesive educational unit, ultimately optimizing the learning outcomes for the students and stakeholders involved.

Table 1

Components and Descriptions of Aspects of the Learning Model

No.	Component	Description of Aspect
1.	Input	The aspect of input covers physical and nonphysical activities: curriculum, learners, educators or tutors, and learning resources.
2.	Process	The aspect of process encompasses: graduate competency standards, curriculum, learning, educators and education personnel, facilities and infrastructure, management, funding and educational assessment.
3.	Output	The aspect of output covers academic and non-academic aspects: attitudes, knowledge and skills of students (academic aspects), as well as students' intellectual skills as a result of the achievement of results in the academic field (non-academic).
4.	Outcome	The aspect of outcome involves: students' abilities and the feasibility of learning modules.

Table 1 elucidates that the design of learning can be meticulously structured by considering these practical system components, establishing a holistic unit that significantly influences the intended learning outcomes in a systemic approach. The design of the mathematics module has been thoroughly assessed and is deemed sufficient in aiding efforts aimed at enhancing the quality of learning facilitated by educators (tutors) within the Package C equivalency program in community education units.

Substantial designs of the learning module include input, process, output, and outcome. The aspect of input, representing the physical and nonphysical potential factors of learning, covers curriculum, learners, educators, or tutors, and learning resources. The aspect of the process encompasses: graduate competency standards, curriculum, learning, educators and education personnel, facilities, and infrastructure, management, funding, and educational assessment. The aspect of output covers academic and non-academic aspects: attitudes, knowledge, and skills of students (academic aspects), as well as students' intellectual skills because of the achievement of results in the academic field (non-academic). The outcome aspect involves students' abilities and the feasibility of learning modules.

- *Empirical Test: Expert validation*

In this crucial step, the validation process involved the expertise of three key professionals: design, media, and language experts, all of whom boasted a strong academic background and practical experience in the Package C equivalency education program. Their combined expertise was instrumental in thoroughly assessing and validating the learning modules to ensure their feasibility and effectiveness. The validation phase aimed

at determining the feasibility of the learning modules, encompassing a comprehensive evaluation of various critical aspects. To guarantee the modules' practicality and alignment with the intended learning outcomes, several modifications were made during the validation process. These revisions were crucial to enhancing the overall quality and appropriateness of the learning modules.

Table 2

Recapitulation of Validation of Material, Language, and Media

Validator	Result	Conclusion and Recommendations
Material	84% (Valid, minor revision)	Formulation of facts does not complicate students' understanding of the content of the material
Language	83.5% (Valid, minor revision)	Presentation of material needs to pay attention to word structure and description according to the rules that apply to Indonesian spelling
Media	82.5 % (Valid, minor revision)	Need to match the colors in the picture and try to show the meaning to clarify each material
Average	83.33% (Valid)	Aspects of the module, namely structure, organization, language, and media, require minor revisions according to the learning needs of Class XII students of the Package C Program

Table 2 summarizes the validation results, offering a concise yet insightful recapitulation of the validation outcomes related to material, language, and media components. The results are expressed as a percentage, showcasing the extent of validity for each aspect, along with the corresponding conclusions and recommendations based on the evaluation. The material aspect received an 84% validation score, indicating its validity with only minor revisions needed. The language aspect garnered an 83.5% validation score, signifying its validity with minor revision requirements related to word structure and adherence to Indonesian spelling rules. Similarly, the media aspect achieved an 82.5% validation score, necessitating minor adjustments, particularly in colour coordination and enhancing clarity of material representation. The average validation score across all aspects was an impressive 83.33%, affirming the overall validity of the learning modules. This amalgamation of validation scores underlines that the structure, organization, language, and media components of the modules require only minor revisions, ensuring their adaptability to the learning needs of Class XII students enrolled in the Package C Program.

Summarily, based on the outcomes presented in Table 2, the validation process showcased that the content (84%), language (83.5%), design, and media (82.33%) components are valid, albeit with minor revision requirements. The remarkable overall validation percentage of 83.3% serves as a strong affirmation of the modules' validity, paving the way for the research to progress seamlessly into the subsequent phases.

- *Implementation: Results of field trial*

In the present work, the field or operational trials have the same procedures as the conceptual trial. The operational trial of the learning module model was carried out in two community education service units in Gorontalo Province: learning activity center and the

center for community learning activity. In the trials, there were two groups consisting of 20 participants each. Furthermore, all data were analyzed using a process like the conceptual model analysis. By paying attention to the urgency of the activities and the implementation mechanism as explained in the previous description, the results of the field test describe the analysis data of the operational trial scores, the data on the results of the model effectiveness test and the recapitulation data of implementation, readability, and attractiveness of the learning module model implemented in the research sites. The results can be seen in Table 3 to Table 7 as follows:

Table 3

Analysis Results of Operational Trial of Mathematics Module for Class XII Students of Package C Equivalency Program at Learning Activity Centers

	Mean	N	Variance	Std. Deviation
Pretest	67.62	20	92.51	9.62
Posttest	77.14	20	80.87	8.99

To enhancing data clarity and interpretation, a graphical representation was incorporated to depict the data conveyed in the table and presented in Figure 1. This graph enabled a visual assessment of patterns, trends, and correlations within the dataset, offering a more intuitive understanding of the information.

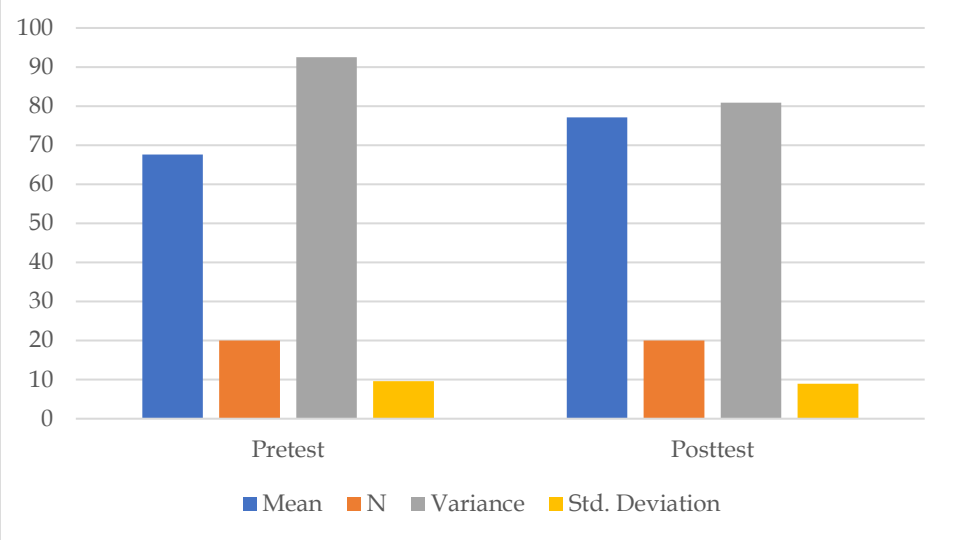

Figure 1: *A visual assessment of analysis results of operational trial of mathematics module*

Table 4

Results of Effectiveness Test of Operational Model Mathematics Module for Class XII Students of Package C Equivalency Program at Learning Activity Centres

	Mean	Std. Deviation	t-count	t-table	N	Range

Pretest	67.62	9.62	12.41	2.01	20	9.52
Posttest	77.14	8.99				

The field test results reported in Table and Table 4 indicate that the mathematics learning modules were effective as the t-test signified a difference between the average score of the pretest and post-test. From the t-test result, the value of t-count was found 12.41, which was then compared with the t-table score of 2.01. In other words, t-count > t-table 2.01 at the significance level of 0.05. This result indicates a difference in the students' learning outcomes before (67.62) and after the learning activities (77.14). There is an increase in the students' learning outcomes after the treatment (from 67.62 to 77.14), signifying an increase of 9.52. Such a result indicates that the learning module effectively boosts students' performance.

Table 5

Analysis Results of Operational Trial of Mathematics Module for Class XII Students of Package C Equivalency Program at Community Learning Activity Centers

	Mean	N	Variance	Std. Deviation
Pretest	66.62	20	19.87	4.46
Posttest	76.00	20	62.00	7.87

In the interest of ensuring a clearer representation of the data, a graph has been included to visually represent the information from the table. Figure 2 display this graph to enhance the accessibility of the data, making it easier to grasp and analyse the dataset.

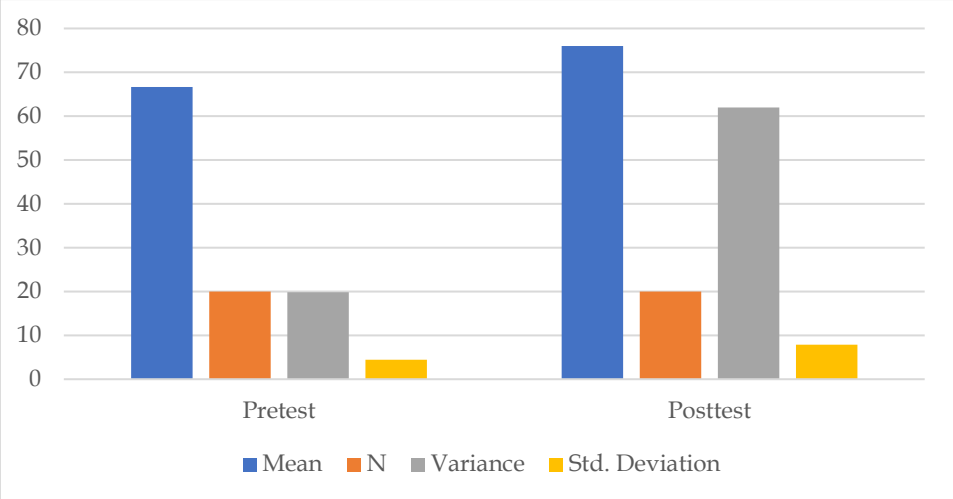

Figure 2: *A visual assessment of analysis results of operational trial of mathematics module*

Table 6

Results of Effectiveness Test of Operational Model Mathematics Module for Class XII Students of Package C Equivalency Program at Community Learning Activity Centers

	Mean	Std. Deviation	t-count	t-table	N	Range

Pretest	66.62	4.46	11.35	2.01	20	9.38
Posttest	76.00	7.87				

The field test results in Table 5 and Table 6 report a difference between the pretest and post-test scores of the students who learned using the mathematics learning modules. The aspect of the model of the modules is considered effective as the t-test signifies a difference between the average score of pretest and post-test. The results of the t-test reveal the value of t-count as 11.35, which is then compared with the t-table score of 2.01. In other words, t-count > t-table 2.01 at the significance level of 0.05. This result indicates a difference in the students' learning outcomes before (66.62) and after the learning activities (76.00). There is an increase in the students' learning outcomes after the treatment (from 66.62 to 76.00), signifying an increase of 9.38. Such a result indicates that the learning module effectively boosts students' performance.

Table 7

Recapitulation of Implementation, Readability, and Attractiveness Aspects

Aspect	Learning Activity Centers			Community Learning Activity Centers		
	Category			Category		
	Good	Adequate	Poor	Good	Adequate	Poor
Implementation	95.40	4.60	-	94.70	4.20	1.10
Readability	91.50	6.50	2	86.30	10.30	3.40
Attractiveness	93.45	4.55	2	86	11	3
Average	93.45%	5.2%	1.33%	89%	8.5%	2.5%

From three aspects, the Table 7 data shows the percentage of the mathematics learning module set implemented in the two Learning Activity Centers community education units. The percentage of each aspect, i.e., applicability, readability, and attractiveness, measures was 93.45% (good), 5.2% (moderate), and 1.33% (low), respectively. Meanwhile, the percentage of the same aspects in Community Learning Activity Centers measured was 89% (good), 8.5% (moderate), and 2.5% (low). Quantitatively, the average validation percentage ranges from 89% to 93.45%, indicating that the modules are feasible.

These findings report that three aspects of the mathematics learning modules, or the research focus, meet the standard. In other words, the modules can be applied in the learning activities of Class XII Packet C equivalency program students. Results of the trials further underpin the basis of the recommendation for developing and revising the present learning modules from the aspects examined in this research.

Discussion

The findings in the present study explores the effectiveness of the mathematics learning modules in the community education unit, specifically the equivalency program in Learning Activity Centers and Community Learning Activity Centers. This analysis is central to identifying areas needing improvement to better the quality of the Package C equivalency program. In other words, the education equivalency program requires adequate facilities to ensure high-quality learning activities.

Quality education programs play a crucial role in the overall development of the

educational system and the advancement of knowledge and technology (Gupta & Yadav, 2023; Haleem et al., 2022). The advent of the industrial revolution 4.0 era has brought about significant changes in education systems, with technology playing an important role (Kenedi et al., 2019; Rahmatina et al., 2019). This progress has greatly influenced various aspects of the learning process to advancements and developments in the field of education and learning. These advancements have had a significant impact on various aspects of the learning process, leading to changes in curriculum design, implementation strategies, and the application of innovative learning models (Kim, Raza, & Seidman, 2019), as well as the integration of relevant learning media and resources across all educational levels, ranging from elementary to secondary and higher educational institutions (Kenedi, Hendri, & Ladiva, 2018).

The incorporation of software and hardware has positive effects on the activities that take place in the classroom from a technological point of view (Abdulrahaman et al., 2020). The utilization of technology in classroom learning and collaborative learning groups has revolutionized the learning experience, promoting meaningful and engaging processes. Extensive research supports the notion that the application of technology in education yields enhanced student learning outcomes. These findings strongly suggest that classroom activities that do not incorporate technology may be less effective in achieving desired educational outcomes. Therefore, it is crucial to recognize the practical utility of technology in education to continuously improve educational institutions and create a more effective learning environment.

Teachers, tutors, and lecturers play a crucial role in the educational landscape as they serve as key facilitators and guides in the learning process. Their significance lies in the transformative impact they have on students' academic and personal development, shaping the future of individuals and society as a whole (Mubaraq, Hermaniar, & Palupi, 2019). For this reason, they are urged to design, develop, manage, and apply appropriate learning approaches to fulfill the predetermined learning goals (Eliyasni, Kenedi, & Sayer, 2019; Fernandes, Rodrigues, & Ferreira, 2020). As a fundamental component of the educational process, educators bear a critical responsibility to drive significant changes in implementing strategic and productive learning models (Bao, 2020). Some recent studies report that incorporating relevant IT resources boost students' interest and motivation, resulting in meaningful learning processes and outcomes (Hamimah et al., 2019; Kurniawan & Piyana, 2019; Rifqiawati et al., 2020).

By embracing technology, educators can tap into a vast array of tools and resources that enhance teaching methods, foster interactive learning experiences, and facilitate individualized instruction tailored to students' unique needs and learning styles (Moorhouse & Yan, 2023). The integration of software and hardware in classrooms empowers both educators and students, transforming traditional classrooms into dynamic, technologically advanced learning spaces that promote collaboration, critical thinking, creativity, and digital literacy skills. As technology continues to advance, it is imperative for educational institutions to embrace and adapt to these changes, harnessing the power of technology to unlock the full potential of students and prepare them for success in an increasingly digital world.

Facilitating students with engaging technology resources marks a transformative shift in the traditional roles of students and educators within the learning process. This shift is

driven by the integration of technology as a powerful tool to enhance learning experiences and empower students to take a more active and participatory role in their education (Fatmi, Nadia, & Siska, 2021). This concept signifies that innovation is the key for educational institutions to improve their quality. In this case, educators need to facilitate learning activities using teaching resources that consider the thinking process, concept interpretation and formulation, and the application of learning principles (Munna & Kalam, 2021). The notion of facilitating students with engaging technology resources and specific learning modules highlights the importance of teachers' roles in the learning process. While technology and learning modules provide valuable tools and resources to enhance the educational experience, the effectiveness of these resources heavily relies on the skillful facilitation and guidance of teachers (Ramli et al., 2018).

The research findings clearly demonstrate that the design of the learning module, encompassing input, process, output, and outcome aspects, yields substantial data that substantiates the application of the mathematics learning module. The comprehensive validation, covering material, language, media, and design, stands at an impressive 83.3%, affirming the validity of the learning modules and paving the way for the research to progress to the subsequent phase. Essentially, this indicates that the structure, organization, language, and media are not only viable but also highly applicable to Class XII students enrolled in the Package C Program.

In the field test, notable differences in pretest and posttest scores were observed among students utilizing the mathematics learning modules. The model aspect of these modules exhibited remarkable efficacy, as evidenced by the t-test, highlighted a substantial difference between the average pretest and posttest scores. Moreover, the research revealed a significant disparity in the outcomes of field trials before and after students engaged in learning activities using the modules. This notable variance in average scores strongly suggests that the learning modules effectively enhance students' academic performance.

All three aspects of the mathematics learning modules, which constituted the research focus, met the expected standard. In essence, this signifies the practical applicability of the modules in the learning activities of Class XII Packet C equivalency program students. The trial results further reinforce the foundation for recommending the development and revision of the current learning modules, considering the aspects examined in this research. These findings underscore that the integration of learning modules into the Community Education Unit can substantially elevate the learning outcomes of Package C equivalency program students. The alignment of these learning modules with established learning procedures, principles, and rules significantly facilitates students in enhancing their learning outcomes.

Anticipated to be a benchmark for relevant studies, this work sheds light on the innovation and optimization of the Package C equivalency program within the realm of community education. Positioned as a subsystem of the national education system, community education plays a pivotal role in developing tailored programs and educational concepts aimed at specific demographic groups, thereby enhancing public welfare (Isa & Anu, 2021). Rooted in axiological principles, all educational and community empowerment endeavors are continually evolved to benefit the community, particularly students, who are the focal recipients of educational services, ensuring the desired quality in learning achievements. Overall, validated, structured learning modules significantly elevate

mathematics education in Community Education Units, requiring continuous research and refinement to meet evolving educational needs and contribute effectively to community well-being.

Conclusion

This study made several conclusions. First, it proved that the Equality education as one of the educational services has a vital role to play in society. Learning materials or the learning modules of the equivalency education program aim to facilitate learning needs, enabling the students to meet the expected goals. Second, the resources must be designed as per the recommended development principles and procedures to develop modules that align with the competencies and learning outcomes. Third, the learning modules for community education unit function must obtain data and information to further enhance the learning programs. The learning modules have four components: input, process, output, and outcome. These four functional components are significant and relevant to the learning activities. The module's design or structure is also valid and practical; this is based on material, language, and media. Finally, the field test results reported a difference between the pretest and posttest scores of the students who learned using the mathematics learning modules. The aspect of the model of the modules is considered effective as the t-test signifies a difference between the average score of pretest and posttest. The three aspects of the mathematics learning modules, or the research focus, met the standards. Such a finding emphasizes the feasibility of the mathematics modules in the learning activities of Class XII students of the Packet C equivalency program.

It is important to acknowledge the limitations of the research study. Despite the positive findings regarding the effectiveness of the mathematics learning modules in the learning activities of Class XII students in the Packet C equivalency program. Firstly, the duration of the study poses a limitation. The study was conducted over a specific timeframe, which might not capture potential changes or developments that could occur over an extended period. Educational interventions and students' responses to learning modules may evolve over time, and a longer study duration could offer a more nuanced perspective on the sustainability and long-term impact of the mathematics learning modules. Secondly, the study's design and methodology could introduce biases. The research primarily relied on pretest and post-test assessments, potentially introducing the issue of test familiarity. Students might become accustomed to the test format and content after the initial pretest, influencing their responses in the post-test. This familiarity could artificially inflate the perceived effectiveness of the learning modules. Additionally, the study's context and setting could be seen as a limitation. The research focused on specific Community Education Units within a particular geographic region, potentially limiting the transferability of findings to diverse educational contexts. Different regions or countries may have varying educational systems, cultures, or resources, which could influence the implementation and effectiveness of the mathematics learning modules differently.

Furthermore, the study primarily gauged student outcomes immediately after the intervention, providing a snapshot of short-term effects. However, assessing the durability and persistence of the observed improvements over an extended period would enhance the study's comprehensiveness and provide valuable insights into the longevity of the modules' impact on student learning. Addressing these additional limitations is essential

to present a more nuanced view of the research study and guide future investigations. Future research endeavors should carefully consider these limitations and employ appropriate strategies to mitigate their impact, ultimately enriching our understanding of the effectiveness and potential applications of mathematics learning modules.

Looking ahead, this research lays the foundation for advancing mathematics education within Community Education Units. The validated learning modules, with necessary refinements, can substantially elevate learning outcomes for Package C equivalency program students. As technology continues to evolve, integrating innovative teaching approaches and learning technologies can further enhance the impact of these modules, promoting a more effective and engaging learning experience. Future research should address identified limitations and explore diverse contexts, fostering continuous improvement and innovation in mathematics education for the benefit of students and communities.

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