



Autonomous Learning of Physics Education Students in the Implementation of Merdeka Belajar-Kampus Merdeka (MBKM) Block Curriculum

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ABSTRACT

The implementation of the Merdeka Belajar-Kampus Merdeka (MBKM) policy as a new paradigm for higher education in Indonesia requires study programs to design adaptive and flexible curricula. This study aims to analyze the implementation of the MBKM-based block design curriculum on improving autonomous learning in Physics Education students. This study uses a quantitative descriptive approach, supported by qualitative data from in-depth interviews, analysis of academic policy documents, and a literature review. Quantitative data were collected through a validated questionnaire distributed to 230 students, 12 lecturers, and 3 administrative staff. The data covered understanding of the MBKM policy and six aspects of autonomous learning: responsibility, self-awareness, intrinsic motivation, managing learning, evaluating learning, and decision-making. The results of the study indicate that the implementation of the block design curriculum based on MBKM was carried out through curriculum restructuring and reconstruction of learning activities, with the majority of students showing positive attitudes towards the six aspects of autonomous learning (the combined percentage of agree and strongly agree ranged from 73%-86%). This block design curriculum reconstruction was identified as being related to the development of student autonomous learning and has the potential to minimize academic obstacles. Theoretically, these findings enrich the understanding of the application of Self-Regulated Learning and Self-Determination Theory in the context of an innovative curriculum based on higher education policy in Indonesia. Practically, the results of this study can be a reference in designing a curriculum based on MBKM that supports the strengthening of student autonomous learning.

Keywords

Autonomous Learning
Innovative Curriculum
MBKM
Physics Education

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Introduction

Higher education is crucial for a nation's progress, especially in addressing increasingly complex global issues. This aligns with the Sustainable Development Goals (SDGs), which emphasize the importance of ensuring equitable, inclusive, and quality education and promoting lifelong learning opportunities for all. Merdeka Belajar-Kampus Merdeka (MBKM) activities outside the campus include internships/work practices in the industry, active involvement in various activities in rural areas, knowledge sharing at school, student exchange participation, research, entrepreneurial activities, and humanitarian programs [1]. These activities can be converted to credit equivalent to one semester, based on the curriculum previously arranged as the learning implementation guidelines for Outcomes-Based Education (OBE)-based KKNI curriculum and considered the MBKM program. The MBKM program can develop student innovation, creativity, capacity, personality, knowledge, cooperation, time management, competence, achievement, and hard and soft skills. In the long term, the MBKM is expected to improve graduates' competence [2].

Curriculum transformation in Indonesia is crucial, particularly in higher education, to improve the quality of education, enhance competency, and adapt to changing times. Curriculum innovation is essential for developing scientific and computational thinking competencies, as well as the application of educational technology required by today's global world [3]. Curriculum transformation must be adapted to the industrial revolution and the demands of the digital era to develop 21st-century skills, including critical thinking, problem-solving, and technology integration [4]. Furthermore, the essence of this transformation lies in the development of values and character, namely a curriculum oriented towards the Indonesian National Qualifications Framework (KKNI). This curriculum must maintain humanistic values with an emphasis on character development and local values within a multicultural society. Curriculum transformation also encourages improvements in the quality and equality of education, as realized in the MBKM program. The implementation of the MBKM curriculum provides students with the freedom to determine their own learning path [5].

Specifically, the Higher Education policy initiated by the Ministry of Higher Education, Science and Technology (Kemendikristek) focuses on four aspects: the right to study outside of study programs, a student-centered curriculum, flexibility that encourages student autonomous learning, and a focus on the quality and access to higher education. This policy

focus is a continuation of the policy of the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) regarding the MBKM policy. Although the Ministry of Education, Culture, Research, and Technology under the Red and White Cabinet was restructured into three ministries consisting of the Ministry of Primary and Secondary Education, the Ministry of Higher Education, Science and Technology (Kemendiktisaintek), and the Ministry of Culture, the MBKM policy continues under the auspices of the Ministry of Higher Education, Science and Technology (Kemendiktisaintek). This continuity shows that the main direction of higher education policy still refers to the MBKM policy.

MBKM is a policy initiated by the Indonesian Ministry of Education, Culture, Research, and Technology that is oriented towards the world of work with the aim of realizing an innovative and flexible curriculum. The MBKM policy bridges the gap between academic learning and the practical demands of the world of work. This policy strongly represents the curriculum transformation in Indonesia through collaboration and mentoring, practical learning experiences, and curriculum flexibility. One example of this collaboration and mentoring is the school driving program, which integrates anti-corruption education into the curriculum, involving collaboration between higher education institutions and schools [6]. The practical learning experience in the MBKM policy is realized through internships and direct student engagement with the community. The campus teaching program encourages students to be directly involved in strategic development and problem-solving in the educational environment. The internship program can build students' confidence for a professional work environment based on the experience gained from the internship program [7]. Furthermore, the MBKM policy offers curriculum flexibility, requiring all universities in Indonesia to restructure their curriculum to accommodate new educational procedures and selection processes for participation in the MBKM program. This curriculum restructuring involves a new learning model with a practical, hybrid, and community-based learning approach [8]. The selection process for program participation involves several criteria such as GPA, course credits, and activity proposal scores.

The MBKM policy encourages students to improve their abilities, creativity, and innovation through curriculum flexibility that provides freedom in the learning process through autonomous learning, which has a positive impact on students' study period. Autonomous learning can be realized through several ways in the implementation of MBKM, including involvement in community life, hybrid learning models, internship and teaching programs, and soft skills development. MBKM allows students to learn from real experiences by integrating learning with community life [8]. Autonomous learning can also be realized through a hybrid learning model, because the use of a hybrid learning model provides flexibility in place and time in the learning process [9]. Through internship programs and

campus teaching, students can improve their problem-solving skills, strategic thinking, and innovation [7]. The implementation of MBKM also has a positive impact on students' study period, such as increasing student motivation and learning outcomes, improving graduate quality, and providing multicultural experiences. The application of a learning model based on the MBKM curriculum can improve student motivation and learning outcomes [8]. Improving graduate quality is implemented through research support and industry participation, which encourages students to be better prepared for the workforce [10]. Meanwhile, students gain multicultural experience through learning programs outside their study program and student exchanges [11]. The implementation of the MBKM program has had a positive impact on increasing autonomous learning through the curriculum flexibility offered by the MBKM policy.

The MBKM policy under the Ministry of Higher Education, Science, and Technology (Kemendiktisaintek) is relevant to this research. The flexible learning aspect that encourages student autonomous learning is one of the objectives of the Merdeka MBKM Policy. This research directly aims to examine the implementation of this policy, particularly in the aspect of autonomous learning. Furthermore, the formation of autonomous learning is also motivated by the right to learn outside of study programs and student-centered curricula. The MBKM policy requires students to be more active in managing learning strategies, time, and resources without full direction from lecturers. This research, particularly in the Physics Education study program, which demands an understanding of abstract concepts and complex problem-solving that require student learning independence, demonstrates strong relevance to the current MBKM Policy. This research provides an empirical contribution to the MBKM Policy regarding how curriculum flexibility can enhance student autonomous learning.

The Physics Education study program is one of the institutions that produces and prepares teachers at the Faculty of Islamic Education and Teacher Training. Currently, the Physics Education study program at UIN Sunan Kalijaga has achieved excellent accreditation. Overall, this achievement is a source of pride for the study program. However, several evaluations and SWOT analyses have revealed several shortcomings. One example is the analysis of the last four years, which shows the average length of study for students, with an average of five years and six months. This average certainly gives the impression of a long study period in the Physics Education study program. The Physics Education study program has undertaken various efforts, including curriculum optimization by reviewing the curriculum, including course content, credit load, and adjustments to course placement in each semester. It has also implemented an innovative curriculum design based on MBKM with the hope of enhancing autonomous learning, which in turn can accelerate students' study period.

This effort is in line with previous research explaining that the MBKM program can improve autonomous learning and accelerate students' study period by increasing creativity,

abilities, and developing independence in seeking and discovering knowledge through the realities and dynamics of the field [12]. Research by Malahati et al. examined the effectiveness of self-control training on the self-regulated learning of students participating in the MBKM program using a pre-test post-test experimental design with a sample of 14 participants [13]. However, the sample in this study was very small, the focus of implementation was only on certain training, and the sample was not specifically on science/physics education students. Research by Utami et al. also examined the effectiveness of the MBKM program on the competencies and learning styles of Geography Education students using a quantitative descriptive method with a sample of 13 students [14]. This study also did not focus on student autonomous learning, but rather on student competencies and learning styles, as well as a different scientific focus. Meanwhile, research by Putri et al. examined the effect of the MBKM program on practice-based learning and vocational skills using a mixed-methods approach with a sample of 175 students [15]. This research gap lies in the focus of the research, namely vocational skills and student work readiness in the context of family welfare education. Thus, these studies generally focus on variables other than autonomous learning with non-science disciplines. Therefore, research examining the effect of the implementation of Independent Learning-Independent Campus on science disciplines, especially Physics Education, is still limited. Autonomous learning is a crucial factor in physics learning, because it requires an understanding of abstract concepts and complex problem-solving skills. Based on this research gap, this study was conducted to analyze the implementation of an innovative learning curriculum design based on MBKM and its relationship to the autonomous learning of physics education students at UIN Sunan Kalijaga Yogyakarta.

Material and Methods

This study uses a quantitative descriptive analytical approach with a theory development design. A descriptive analytical design is a research design that does not test the influence between variables, but rather shows or describes the characteristics of the population accurately and systematically [16]. Through this design, the researcher describes the achievements of the implementation of the innovative curriculum based on MBKM in student autonomous learning. The subjects of the study were students of the Physics Education study program who implemented the innovative learning curriculum based on MBKM, namely Physics Education students from the 2020 and 2021 intakes. The selection of subjects used a purposive sampling technique.

The data collection techniques used were non-test techniques, including interviews, questionnaires, and documentation. Data were collected through in-depth interviews, analysis of curriculum and academic policy documents, a review of relevant literature, questionnaires, and self-reports of student independent learning. This combination of data collection

techniques aimed to obtain comprehensive data from the policy and implementation aspects of the MBKM program at the study program level, empirical aspects, and student perceptions of their independent learning.

The research instrument was a questionnaire proven to be valid and reliable, consisting of a questionnaire on understanding the MBKM program and a self-report questionnaire on autonomous learning. Validity testing of the instrument involved a content validity test aimed at ensuring the research instrument used could represent what was being measured. The questionnaire on understanding the MBKM program was distributed to 230 students, 12 lecturers, and 3 administrative staff, to obtain a comprehensive understanding of the MBKM program from stakeholders at the study program level. Meanwhile, the self-report questionnaire on independent learning consisted of two aspects, namely a personal scale and an educational scale, which were distributed to Physics Education students from the 2020 and 2021 intakes. The research instrument in the self-report questionnaire on independent learning used a 4-point Likert scale consisting of a scale of strongly agree, agree, disagree, and strongly disagree with no neutral option. This neutral option was removed to reduce the tendency to answer neutrally, and to encourage firm statements from respondents on each question in the questionnaire.

The research implementation stages included socialization of understanding of MBKM and independent learning for students. There are two types of data in this study: primary data and secondary data. Primary data consists of data on the implementation of the thematic Community Service Program (KKN-MBKM) participated by students obtained through interviews with field lecturers, students and partners at the KKN location, and data on students' autonomous learning. Secondary data, in the form of documents, was obtained from a documentation study of the implementation of the thematic Community Service Program (KKN- MBKM) for students in the Physics Education study program.

The data analysis technique in this study used descriptive statistical analysis of the percentage of autonomous learning data for students who implemented the innovative curriculum based on MBKM. This analysis technique was used to present the percentage distribution of each aspect of the autonomous learning indicators for students, consisting of responsibility, self-awareness, intrinsic motivation, managing learning, evaluating learning, and making decisions. Data were organized in percentage form to see the distribution of respondents' answers in the categories of strongly agree, agree, disagree, and strongly disagree [16]. The percentage data represents a factual picture of student autonomous learning, presented in the form of a pie chart. The analysis was carried out by presenting percentage data without conducting hypothesis testing.

Results

The MBKM-based curriculum model developed in this study organizes courses through a thematic structure. The innovative MBKM-based curriculum design adopts a blueprint model of thematic KKN–MBKM. The curriculum applies a block system for related courses in semesters six and seven. This block system includes course blocks, student blocks, and lecturer blocks. The curriculum integrates these blocks with the *Kuliah Kerja Nyata* (KKN) program and the Professional Practice Program (*Program Latihan Profesi*—PLP).

The program organizes assignments according to specific themes, so not every course requires separate assignments. This structure enables students to analyze comprehensively the relationships among courses within each block. The curriculum includes two types of assignments: individual tasks and group tasks. Group assignments transform into projects based on inquiry-based learning and problem-based learning, allowing students to engage deeply with real-world problems and collaborate effectively to develop solutions. All members of the academic community must clearly understand the implementation policy of MBKM. Without a supportive institutional system, the policy cannot function effectively because its implementation requires changes across multiple components, such as curriculum adjustments, faculty training, and resource allocation to support inquiry-based and problem-based learning methodologies. Table 1 presents the identification of study program element perceptions of MBKM.

Table 1. Result of Understanding the MBKM Program.

Question	Object	Ministry Channel/ Socialization	Collage Online/ Department	Mass Media	Other
The MBKM information source	Student	121	93	12	4
	Lecturer	2	10	0	0
	Staff	0	3	0	0
Question	Object	Know the Overall Policy	Knowing Most	Knowing the Little	Don't Know at All
Knowing MBKM Program	Student	12	170	46	2
	Lecturer	12	0	0	0
	Staff	2	1	0	0
Knowing that MBKM Allows Taking Programs Outside The Study Program/Off-Campus	Student	31	100	83	16
	Lecturer	12	0	0	0
	Staff	3	0	0	0
MBKM Understanding	Student	42	134	32	22
	Lecturer	12	0	0	0
	Staff	3	0	0	0

Based on Table 1, the results of understanding the MBKM program, there are differences between students, lecturers, and staff in obtaining information and understanding the MBKM program. Most students obtained information related to the MBKM program through socialization. Meanwhile, lecturers and staff obtained information through online collages. Each respondent only chose one answer for each question (single response), so the total answers in each line of questions represent the total number of respondents with a

breakdown of 230 students, 12 lecturers, and 3 staff. The level of respondents' understanding of the MBKM policy is categorized into four levels. First, know the overall policy, namely understanding the objectives, mechanisms, and requirements of the MBKM program as a whole. Second, knowing most, namely understanding some aspects of MBKM but not fully understanding the technical aspects of its implementation. Third, knowing the little, namely only knowing the existence of the MBKM program, not knowing its objectives and implementation mechanisms. Fourth, don't know at all, namely not knowing at all about the MBKM program. Based on these understanding categories, the majority of students, with a total of 170 students, are in the knowing most category, while 12 students are in the know the overall policy category. Meanwhile, 12 lecturers and 3 staff are in the know the overall policy category. As for understanding regarding the MBKM program that can take programs outside the study program, 31 students are recorded as knowing the overall policy category, 100 students are in the knowing most category, 83 students are in the knowing the little category, and 16 students are in the don't know at all category.

This innovative curriculum design, based on the MBKM approach, was implemented for Physics Education students in the 2020 and 2021 intakes. The implementation of this innovative curriculum design has had a positive impact on students' autonomous learning. Data on the improvement in autonomous learning can be seen through the results of student questionnaires in the autonomous learning indicator aspects, which consist of aspects of responsibility, self-awareness, intrinsic motivation, managing learning, evaluating learning, and making decisions. The following are the results of the percentage pie chart for the autonomous learning indicator aspects in Figures 1, 2, 3, 4, 5, and 6.

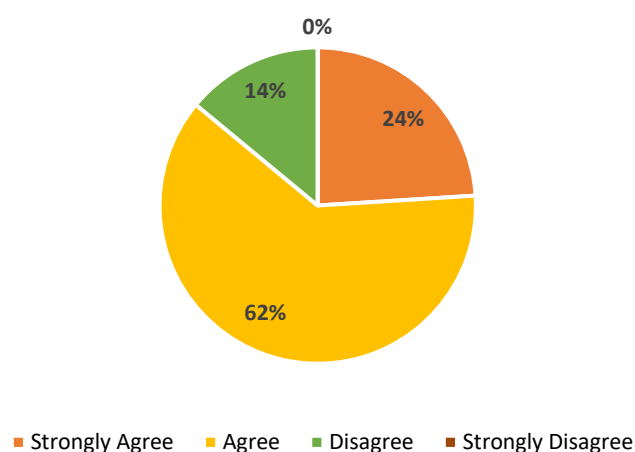


Fig. 1. Percentage of Responsibility Aspect

The first aspect of the autonomous learning indicator is responsibility, which is measured through the questionnaire statement "I am able to manage my time between PLP/Thematic KKN activities and assignments from other courses that I am taking

simultaneously." Based on the percentage diagram in Figure 1, 62% of students agree and 24% of students strongly agree that the implementation of the block design curriculum can improve students' sense of responsibility. This is seen when students take PLP or thematic KKN courses, students are able to manage their time between field activities (PLP or KKN) and other courses that can be taken simultaneously. This sense of responsibility is reflected when students are able to plan and carry out a series of assignments from PLP or thematic KKN as well as assignments from other courses they are taking. For example, in the 6th semester, students can take PLP courses and additional courses such as Classroom Action Research (CAR) and Learning Assessment. Each of these courses has its own tasks. For example, in PLP courses, students have responsibilities in the field or school where they carry out PLP activities, as well as course assignments such as creating PLP reports and teaching modules. In addition, students are also responsible for PTK assignments by conducting mini-research and assessing courses by creating authentic assessments. This block-design curriculum offers curriculum flexibility, allowing students to take additional courses alongside PLP or thematic KKN courses. This allows students to develop their autonomous learning skills, particularly in the area of responsibility.

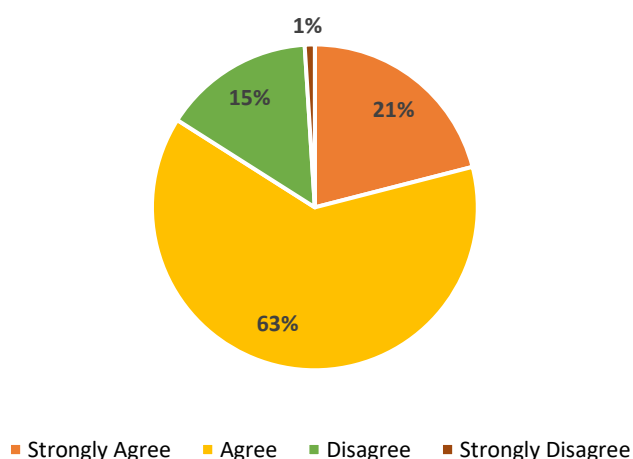


Fig. 2. Percentage of Self-Awareness Aspect

The second aspect is self-awareness. Based on the percentage diagram in Fig. 2, 63% of students agreed and 21% strongly agreed that the implementation of the block design curriculum can increase student self-awareness. The many responsibilities students have in this block curriculum require students to have self-awareness, so that students can manage their time and themselves to complete these responsibilities. Self-awareness is necessary for students to organize and manage their time both in the field and in class. For example, when students take thematic KKN courses and additional courses, their self-awareness indirectly grows because they will have many responsibilities to complete when taking thematic KKN and additional courses. Thematic KKN requires students to carry out projects that are directly

related to the community. In addition, students also have the responsibility to complete academic assignments from other courses.

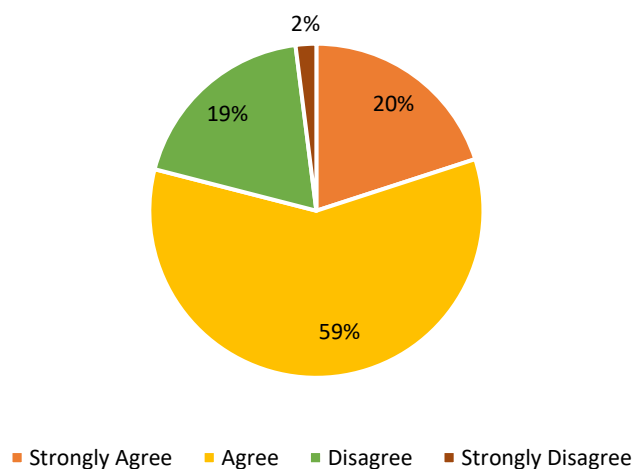


Fig. 3. Percentage of Intrinsic Motivation Aspect

The third aspect is intrinsic motivation. Based on Figure 3, 59% of students agreed and 20% of students strongly agreed with the increase in their intrinsic motivation. This indicates that students carry out and complete their responsibilities based on personal motivation rather than external motivation. Intrinsic motivation is very important for students in the context of autonomous learning. Students are expected to have personal initiative in managing their learning. For example, when students take the PLP course, students must have personal motivation to carry out and complete a series of PLP activities, such as planning and implementing a series of learning activities in class. Similarly, thematic KKN requires students to go directly to the community. Students who have intrinsic motivation will be directly involved in activities focused on community empowerment, carry out a series of PLP activities, and complete academic assignments from additional courses. The percentage diagram in Figure 3 shows that the majority of students have good intrinsic motivation that supports the success of their autonomous learning.

The fourth aspect, managing learning, was measured through the questionnaire statement "I am able to organize and manage learning and assignments from the courses I take in one semester." The percentage of students who agreed was 58% and 15% who strongly agreed. This indicates that students are able to manage their ongoing learning. This ability to manage learning is very important for students when they participate in the MBKM program or the MBKM-based curriculum. The flexibility offered by this curriculum requires students to be able to manage their learning.

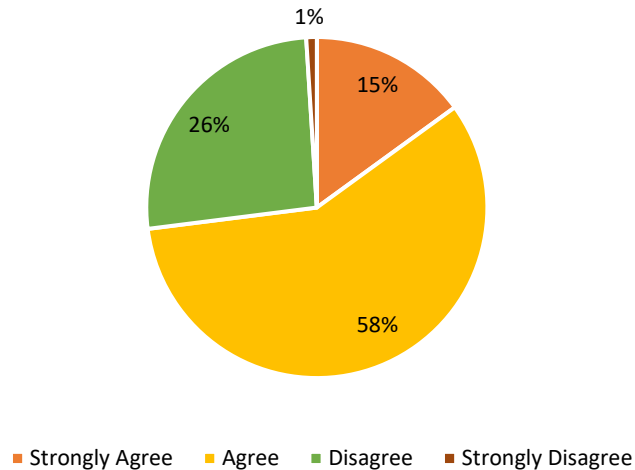


Fig. 4. Percentage of Learning Management Aspect

For example, when students take PLP or thematic KKN courses along with other additional courses, students must be able to manage the planning and implementation of these courses to complete the responsibilities of each course without leaving anything behind or neglected. This ability to manage learning directly encourages the success of student autonomous learning.

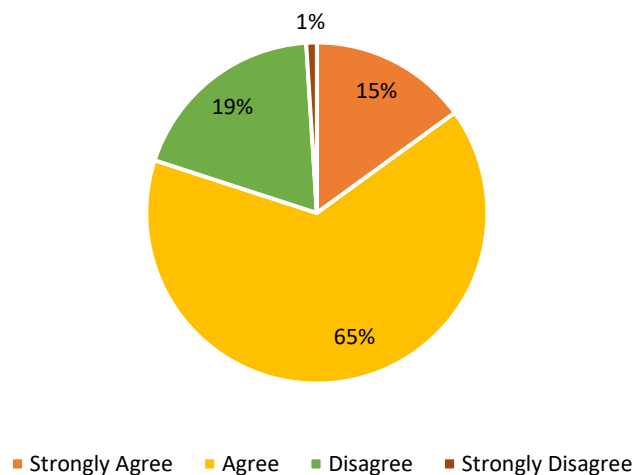


Fig. 5. Percentage of Learning Evaluation Aspect

The fifth aspect is evaluating learning. In addition to managing learning, students can also evaluate their learning. This is evident in the percentage diagram in Figure 5, where 65% of students agree and 15% strongly agree. Most students already have the ability to evaluate learning well. For example, when students participate in PLP or thematic KKN, they are able to assess the effectiveness of the projects they are implementing in providing a positive impact on the community and the school where they are conducting the PLP. Furthermore, students can also evaluate the extent to which they are still fulfilling academic assignments in other courses, such as writing PLP reports, mini-research results, or creating authentic assessments. With these evaluation skills, students can improve and enhance the quality of their learning.

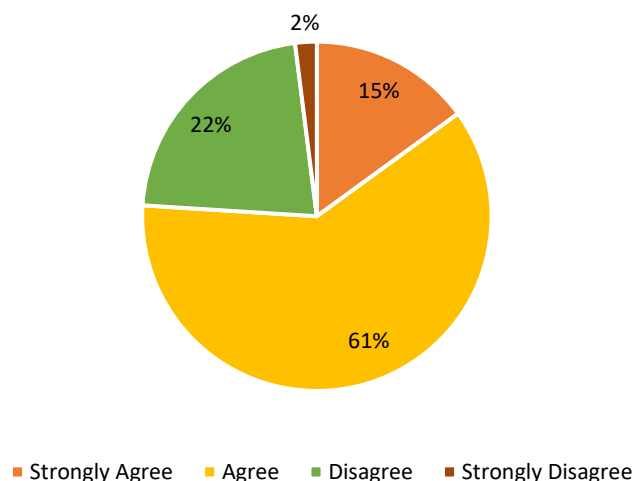


Fig. 6. Percentage of Decision-Making Aspect

The sixth aspect, decision-making, is measured by the questionnaire statement "I am able to make the right decisions related to the learning activities I undertake, both in the implementation of PLP/Thematic KKN, and other course assignments." The percentage diagram in Figure 6 shows that 61% of students agree and 15% strongly agree that they have the ability to make good decisions in their learning. This ability is seen when they take PLP or thematic KKN courses while taking additional courses. For example, when carrying out thematic KKN, students must make decisions in choosing relevant and impactful community empowerment programs. Students must also make decisions regarding what activities will be carried out in class while doing PLP. In addition, in additional course assignments, students must be able to make decisions regarding the topic of mini-research to be taken, the methods and data analysis to be used. The ability to make decisions is one of the important aspects in realizing student autonomous learning, where students can determine their learning steps both in teams or individually.

Based on this, the results of the study indicate that the majority of students showed a positive attitude towards aspects of autonomous learning through the implementation of an innovative curriculum design based on MBKM. This positive attitude was obtained from a combination of categories of agree and strongly agree in each aspect with a total percentage of more than 50%. The combined percentage of positive attitudes for each aspect is 86% for the responsibility aspect (62% agree and 24% strongly agree), 84% for the self-awareness aspect (63% agree and 21% strongly agree), 79% for the intrinsic motivation aspect (59% agree and 20% strongly agree), 73% for the learning management aspect (58% agree and 15% strongly agree), 80% for the learning evaluation aspect (65% agree and 15% strongly agree), and 76% for the decision-making aspect (61% agree and 15% strongly agree). The high percentage of combined positive attitudes in each aspect of the autonomous learning indicator indicates that student autonomous learning has been realized through the implementation of the block

curriculum based on MBKM. The ability of students to take full control over the learning they are participating in is indicated by the high level of student independence.

Discussion

Learning can be defined functionally and mechanically. Functionally, learning is a change in behavior resulting from experience. Mechanistically, learning is a change in the organism resulting from experience [17]. Universities and study programs provide students with various experiences to change their behavior, knowledge, insights, and experiences during their studies. It is necessary to design an adaptive curriculum to be able to implement MBKM on campus.

Curriculum adaptation to realize the objectives of the MBKM program emphasizes the importance of curriculum flexibility. The university's level of responsiveness to the MBKM curriculum is seen in how the curriculum adjustments are implemented on campus. This responsive attitude allows universities to potentially become leaders in educational reform. From a neutral perspective, curriculum adaptation is not easy, with several challenges in its implementation. Meanwhile, from a positive perspective, the MBKM policy can realize one of the study program objectives, namely competitiveness and graduate quality. The implementation of a block design curriculum is a form of adaptation, which allows students to concentrate on specific competencies while encouraging a self-regulated learning (SRL) cycle [18]. This framework will serve as a reference for research findings on the six aspects of autonomous learning.

Before discussing the specific achievements of student autonomous learning, it is important to discuss the extent to which students understand the MBKM policy itself. Based on Table 1, 170 students are in the "knowing most" category, while 12 students are in the "know the overall policy" category. Understanding of the MBKM program outside of their study program shows a greater difference, with only 31 students knowing the overall policy, 100 students knowing the most, 83 students knowing the least, and 16 students not knowing at all. This low level of understanding of programs available outside of their study program indicates that the socialization of MBKM tends to focus only on the existence of the MBKM program, without reaching a technical understanding and understanding of the programs available. Without a sufficient understanding of the MBKM program, the potential benefits of the program will not be optimal, including in improving student autonomous learning, as will be further explained in the discussion of each aspect below.

Based on research findings, 86% of students (62% agree and 24% strongly agree) stated that they were able to manage their time responsibly between PLP/Thematic Community Service Program (KKN) activities and learning and assignments for other courses they were taking simultaneously. The characteristics of this block design curriculum require

students to complete several assignments with simultaneous deadlines, such as PLP activity reports and teaching modules, PTK mini-research assignments, and authentic assessment assignments in assessment courses. This curriculum characteristic trains students' ability to prioritize these assignments so that they can be completed by the specified deadline. Students will naturally encourage a self-regulation cycle consisting of planning, action, and self-reflection phases when faced with concentrating on abilities within a certain time period [18]. This finding is also relevant to Autonomous Study Time (AST), because AST encourages low self-regulation awareness to become greater responsibility for the effectiveness of the learning process [19]. These results are also consistent with previous research [20] which found that the Thematic KKN program based on MBKM was proven to increase learning independence. Research by students from the Faculty of Teacher Training and Education at Pattimura University also reported agreement and strong agreement levels ranging from 82% to 90% for the MBKM program, depending on the program type [21]. This indicates a pattern of positive student perceptions of the MBKM program, although the activities and percentages differed across institutions.

A total of 84% of students (63% agree and 21% strongly agree) stated that they were able to recognize their strengths and weaknesses, thus enabling them to determine appropriate learning strategies. Self-awareness is related to metacognitive abilities that can help students determine learning goals and strategies according to their capacities [22]. Several important factors can influence this aspect of self-awareness, namely a supportive learning environment and lecturer involvement [22]. The role of educators in providing structured guidance and positive feedback is an important factor in the development of student self-awareness. This finding is also in line with the MBKM competency framework, the self-monitoring component of which is related to reflection and self-evaluation in the learning process.

As many as 79% of students (59% agree and 20% strongly agree) stated that they chose additional courses along with the implementation of PLP/Thematic KKN based on their own desires, not just academic obligations. Learning independence driven by intrinsic motivation and emotional regulation has been shown to contribute to academic success [23]. This finding is also supported by the flexibility offered by the MBKM block curriculum, namely students are given the opportunity to choose internship programs, research, or other activities according to their interests and potential [5]. Self-Determination Theory states that internal motivation will increase when someone has the freedom to choose what they learn [24]. Other research also found that around 87% of students have alignment on intrinsic motivation in their learning process [25]. There is a positive relationship and significant influence between the implementation of achievement-based learning and student learning motivation with a

stronger impact on intrinsic motivation compared to extrinsic [26]. This strengthens the indication that learning designs that provide space for freedom of choice tend to foster students' intrinsic motivation.

As many as 73% of students (58% agree and 15% strongly agree) stated that they were able to develop independent learning plans to complete course assignments within one semester. Compared to other aspects, this aspect showed the lowest combined percentage. This is due to the high cognitive load caused by the intensive rhythm of the block system. If not accompanied by good self-regulation, this condition can lead to academic fatigue and procrastination which impacts the completion of the study period [27]. Students who do not have good time management will potentially delay assignments which will impact the delay in completing their study period [28]. However, it has been proven that the integration of information and communication technology helps in improving learning planning and concentration skills. In addition, collaborative learning between lecturers and students also plays a role in helping develop more effective learning management skills [6]. This finding is in line with research by final year students of the Economic Education study program which found that time management contributed 52% to the variability of students' self-regulated learning [29].

As many as 80% of students (65% agree and 15% strongly agree) stated that they regularly conduct learning evaluations to identify areas that need improvement. This percentage aligns with the development and optimization stages in block curriculum design, which consist of constructing, testing, redesigning, and retesting. These stages help students evaluate and refine their learning outcomes. Problem-Based Learning represents the self-modification aspect within the MBKM framework, which encourages students to set goals, manage the process, and evaluate their learning outcomes [30]. This aligns with research by Yan and Carless, who state that self-assessment is a process involving determining assessment criteria, self-reflection, and decision-making based on evaluation results to improve subsequent learning [31]. During this process, students not only monitor the results of their learning evaluations but also identify their strengths and weaknesses in the learning process they are undergoing.

As many as 76% of students (61% agree and 15% strongly agree) stated that they were able to make decisions in the learning process, such as making decisions about additional courses to take, determining mini-research topics for PTK assignments, and determining programs to be implemented in Thematic KKN and classroom learning during PLP. Self-Determination Theory states that independence will increase when students are given space to make decisions independently [24]. This space is formed due to the implementation of the MBKM-based curriculum which offers learning flexibility and opportunities for students to

determine their own learning. This finding is also supported by research by Pattimura University students who found an increase in approval of the MBKM program, with 87% approval of research activities and 86% approval of entrepreneurial activities [21]. Both activities encourage students to set goals, choose strategies, and make decisions independently during the learning process.

Overall, the dominant percentage of positive attitudes in the six aspects of autonomous learning indicators indicates a shift from conventional learning to more independent learning. This finding aligns with Self-Determination Theory, which states that students' learning independence will develop when they are given the space to make autonomous decisions regarding their learning process [24]. Several factors support this success, including metacognitive abilities and self-efficacy that help students set learning goals and strategies, as well as the involvement of lecturers in providing direction and positive feedback [22]. The integration of information and communication technology also supports this success, namely facilitating students' learning planning and concentration skills [32]. In addition, another supporting factor is collaborative learning between lecturers and students [6].

However, behind this success lies a challenge, namely the aspect of managing learning shows the lowest percentage among the six aspects of autonomous learning. This indicates that the flexibility of this block design curriculum has the potential to cause a high cognitive load due to the intensive learning rhythm. Without adequate self-regulation, this cognitive load will lead to academic fatigue and procrastination, which impacts the completion of the study period [27] [28]. In addition to internal student factors, the successful implementation of MBKM is also influenced by the institutional context. The MBKM policy usually faces different institutional and cultural challenges at each university, requiring adjustments in the socialization approach and mentoring [33]. The results of this study confirm that improving student autonomous learning depends on the interaction of curriculum flexibility, institutional and lecturer support, and student self-regulation capacity.

Conclusion

This study aims to determine the impact of the implementation of an innovative learning curriculum design based on MBKM on the autonomous learning of physics education students at UIN Sunan Kalijaga Yogyakarta, which is measured through six aspects including responsibility, self-awareness, intrinsic motivation, managing learning, evaluating learning, and decision-making. The results showed that the majority of students showed positive attitudes in all six aspects with a combined percentage of agree and strongly agree. Positive attitudes in the aspects of responsibility were 86%, self-awareness 84%, intrinsic motivation 79%, managing learning 73%, evaluating learning 80%, and decision-making 76%.

The high percentages for the responsibility and self-awareness aspects align with initial expectations, namely that this block-design curriculum requires students to complete multiple assignments within a simultaneous deadline, which naturally fosters both aspects. However, the relatively low percentage for the learning management aspect is an unexpected finding, as this aspect is conceptually related to the responsibility and decision-making aspects, which actually have a higher percentage. This suggests that the flexibility of the block curriculum based on MBKM, rather than enhancing student autonomous learning, has the potential to create cognitive overload due to the intensive learning rhythm. Therefore, the success of autonomous learning within the MBKM framework is contextual.

This research contributes to the empirical picture of the implementation of an innovative curriculum based on the MBKM program, which improves student autonomous learning, with more detailed indicators. The results can be used as a reference for other study programs in designing curricula that support student autonomous learning, while also providing practical implications in the form of mentoring in more intensive learning management. Furthermore, the results can be used as a consideration by policy developers to go beyond simply publicizing the program's existence to equip students with strong self-regulation skills.

Limitation and Suggestions

This study is purely descriptive in nature and only measures student perceptions at a single point in time, without an experimental design or control group. Therefore, this study cannot establish a causal relationship between the implementation of the MBKM-based block curriculum and the improvement of student autonomous learning. Future research is expected to use an experimental or quasi-experimental design by conducting inferential statistical tests such as t-tests, regression, or ANOVA to objectively measure the effect of the MBKM-based curriculum implementation on improving student autonomous learning, as well as expanding the scope of the research to other study programs.

Conflict of Interest

The authors declare no conflict of interest.

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