

The influence of the independent learning curriculum on the lecture process of undergraduate engineering students in Indonesia

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Abstract. Significance changes are taking place at universities in Indonesia since the implementation of the MBKM curriculum. MBKM requires universities to provide internships for students outside the study program equal to twenty credits for three semesters. It makes them confused because they are more familiar with theoretical lectures than practical ones. The same thing happened at the State University of Surabaya. Although universities have issued guidelines for implementing MBKM, many study programs still need to implement them. They assume that the twenty credits of the internship will reduce the theory, increase the burden on students to graduate, and extend the student's study period. The apprentice reduces class to twenty credits in the sixth semester, while it expands to PI and PLP in the seventh and eighth semesters, respectively. MPK appears as a course that accommodates internships in the sixth semester. MPKs classify students' abilities during internships. The evaluation of MPK appeared in the last two semesters of the mechanical engineering education study program. The scores that students got on MPK were higher than in theory, and this caused an increase in their GPA. Not only it, but the MPK scores also increased from the first semester to the second semester. It shows that students' skills improve with internships because the evaluation was based on the number of tasks completed by students.

Keywords: Universities in Indonesia, MBKM curriculum, State University of Surabaya, Praktik Industri (PI), Pengenalan Lingkungan Persekolahan (PLP), Magang Praktik Kerja (MPK).

1 Introduction

The Independent Learning Curriculum (Merdeka Belajar Kampus Merdeka/MBKM) launched by the Minister of Education of the Republic of Indonesia in 2020 has changed students' credits. Vocational education study programs easily absorb MBKM because it requires three full semesters of students to study outside the study program. However, for academic education

study programs, the implementation of MBKM requires adjustments. Some of the adjustments needed are to reduce the number of theory classes and include internship credits in a course for the input of internship scores. The problem is that MBKM requires the number of internship credits to be twenty per semester.

The MBKM curriculum aims to equip students with more than one skill to prepare for work because one job requires more than one skill. The same thing happened to the vocational curriculum. Vocational education facilitates schoolwork connections with different physical, social, and cultural practices [1]. Vocational students are expected to be able to cross these boundaries, and the vocational curriculum provides experiences to adapt to the schoolwork context. One of the adapted methods is a hybrid configuration. This method brings social practices closer to the school and workplace interface, such as giving unclear and authentic assignments.

The vocational education and training (VET) systems also adopt hermeneutics, a theory of understanding and interpretation [3]. It combines theory and practice in a hermeneutic circle. The circle is a continuous back-and-forth process of theory practice by increasing work opportunities using training packages. This method can make deeper the understanding of a student or worker both on the theoretical and the practical side. The extension of hermeneutics theory is carried out to measure, predict and control what students learn during their learning process. It makes the learning process directed towards the goals to be achieved.

Developments in society and industry affect curriculum changes. The curriculum needs to be reconstructed to meet the realities and demands of higher education (HE) graduates [9]. Multidimensional frameworks require a complexity paradigm as a way to solve them. The growth of cross-curricular competencies could answer these challenges in VET [11]. Competencies such as values, attitudes, skills, and knowledge can be taught in the classroom. In an organization, competence is also the key to success. Within this framework, systemic, interpersonal, and instrumental competencies become important in HE. Curriculum changes by active methodologies create problems in terms of evaluation. It can be hard for both tutors and students.

Employability is currently one indicator of the success of the curriculum compiled by HE [12]. It is responsible for several aspects like government policies in education, industry needs for graduate skills, and the ability of graduates to provide professionalism. The curricular development introduced to balance workability and academic practice is T&I. The feasibility of working in HE is still under debate because it is more normative than behavior in the real world of work. Another interesting point is the relationship between socioeconomic disparities to curriculum tracking [13]. Several studies show that economically disadvantaged groups are usually hindered from accessing HE. This tracking means a wide that is selection of prospective students. A notable factor in the success of the curriculum is prospective students.

This study analyzes the implementation of the MBKM curriculum in engineering study programs. This study program includes the field of academic education. In the process, MBKM was approached with the VET curriculum. MBKM's demand that the study program provides twenty credits every semester for three semesters has caused modifications to adjust it. There is a reduction in elective courses in the final semester, and several internship courses (Magang Praktik Kerja/MPK) weighing two to three credits appear as replacements. Students do an internship in the industry for one semester with several topics, according to the MPK provided.

Some of these topics are used to fill in the MPKs score of twenty credits. The internship has been running for two semesters, and this paper discusses the evaluation.

2 Method

Most campuses in Indonesia use almost the same credit load, ranging from 144 to 150 credits to graduate from the undergraduate level. The distribution of the burden in each semester is different but similar. Table 1 shows the course load in the mechanical engineering education study program at the State University of Surabaya based on the 2019 Outcome-Based Education (OBE) curriculum. Other universities distribute an average course load of 18 credits each semester, then 144 credits will be obtained in the eighth semester. However, most study programs distribute the course load each semester, as in Table 1. Because there is a policy for students who achieved a high achievement index in the previous semester that they are entitled to apply for an additional credit load in the following semester.

Table 1. Distribution of course load for each semester at the undergraduate level.

Semester	Credits
1	23
2	20
3	24
4	23
5	20
6	23
7	11
8	4
Total	148

In the mechanical engineering education study program, eleven credits in the seventh semester contain four credits for introduction to the school environment (Pengenalan Lingkungan Persekolahan/PLP), two credits for industrial practice (Praktik Industri/PI), and five credits for the thesis. All of these courses are practical courses outside the classroom. The eighth semester contains in-classroom theory, entrepreneurship, and elective courses that weigh two credits each. The MBKM curriculum in the final three semesters of the undergraduate level can be automatically applied in the seventh and eighth semesters. However, the implementation in the sixth semester requires a reduction in other courses, so the burden of twenty credits for internships is fulfilled. Table 2 shows the subjects that were omitted and replaced with MPK.

Table 2. Theoretical subjects were removed and replaced by internship subjects.

Theoretical Subject	Internship Subject	Credits
Education Psychology	MPK Planning	2
Education Philosophy	MPK Program Design	3
Basic Culture	MPK Operational Management	2
Lesson Planning	MPK Occupational Health and Safety	3
Learning Media	MPK Program Implementation	3
Education Management	MPK Program Dissemination	2
Community Service Program (KKN)	MPK Program Reporting	3
Machine Maintenance	MPK Program Assessment	2
Total		20

Table 2 used theoretical courses with internship courses, resulting in twenty internship credits in the sixth semester. Meanwhile, the internship courses are included in the PI and PLP courses in the seventh and eighth semesters. It is done so that the total credits students take are at most 150. Therefore, PI has expanded programs such as MPK and has twenty credits. PLP is also undergoing program expansion, as shown in Table 3, all of which have twenty credits. The university also prepares collaborative programs with industry to support MPK, such as certified internships for six months to one year to hone students' skills in work experience.

Table 3. The expansion of PLP course.

Subject	Credits
PLP School Management	2
PLP Curriculum Analysis	2
PLP School Program Development	2
PLP Lesson Plan Development	3
PLP Learning Media Development	2
PLP Development of Teaching Materials	3
PLP Teaching Practice	4
PLP Learning Assesement	2
Total	20

Changes in the curriculum from academy-based to work-based affect the pattern of thinking. There will be a lot of confusion in its application. The VET curriculum bases its learning on narrow skills with little theoretical knowledge as it is driven by the demands of the job market [5]. It makes it difficult for academics who are used to a lot of theory and poor skills. Therefore, the execution of the MBKM curriculum is only carried out by a few study programs. Lecturers are less able to translate the direction of curriculum goals. They think that the MBKM curriculum will reduce teaching hours, increase student credits for graduation, and extend students' graduation time. This curriculum only wants to upgrade students' skills by providing work experience so that students' waiting time for work is short.

Students' scores on the MPK are based on the scores they received during the internship. The lecturer did not make any changes to the score. The MPK scores are purely a reflection of the student's behavior during the apprenticeship. It is under the principle that schools are liaison agents between families and communities that provide students with knowledge and skills [6]. Intern supervisors are competent practitioners in their respective fields. The MPKs are not carried out in a different internship place. They are carried out in the same place but with dissimilar skill groupings. It is also what is still being debated among lecturers in interpreting MPKs. They think each MPK is done at a different internship place in the same semester.

The university frees students to choose where to do an internship. It is based on the MBKM curriculum, which frees students to select job skills. The university's control lies in the administrative requirements of the internship location, where it must have an evident address and not a fictitious business. In addition, each MPK lecturer has the right to ask for progress during the internship. The load of 20 credits of apprenticeship in one semester is equivalent to eight hours a day for six working days. If the students can stay in the same internship for three consecutive semesters, they will have one and a half years of experience working in that field. This achievement is desired by the MBKM curriculum, where students have 90% skills and 10% knowledge [8] for three semesters before they graduate from college.

3 Results and Discussion

The average value of all MPKs obtained by students during their internship is presented in Figure 1. Students with the 2018 entry year perform their first MPKs in the odd semester, August to December 2021. 2018 and 2019 entry-year students perform MPKs in the even semesters, February to June 2022. Figure 1 presents student data for the 2018 entry year only.

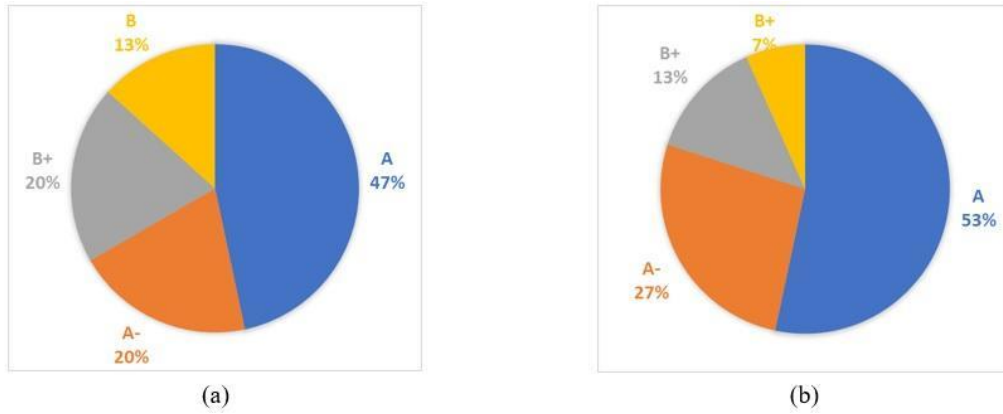


Fig. 1. The average score of 2018 entry-year students at MPKs (a) in odd semester, (b) in even semester.

Figure 2 presents the average GPA of students per year of admission. The years of entry being compared are 2016, 2017, and 2018. Students of the 2018 entry year undergo MPKs, while others do not. From the left side are the GPA averages in the fifth, sixth, seventh, and eighth semesters.

Students' scores on MPK have a high average, as shown in Figure 1. In odd semesters, as many as 13% of students got a B (moderate). In the even semester, only 7% of students took a B. It means there is an increase in students' skills because the MPK assessment was based on two categories, student presence and assignments. A high score means many tasks can be completed. The assessment procedure is left entirely to the industry as it is part of the curriculum.

Practical lectures have a positive impact on theory-practice balance. It can illustrate by the average score of MPKs. Courses are often carried out in a lab with media equipment to support them [4]. This experience provides students with a lot of theoretical knowledge. The same thing happens in mathematics courses which are also filled with theory. It makes the mathematics curriculum hard to fit into the VET curriculum [2] because it focuses on profound narrow job skills. The average value of all MPKs obtained by students during their internship is presented in Figure 1. Students with the 2018 entry year perform their first MPKs in the odd semester, August to December 2021. 2018 and 2019 entry-year students perform MPKs in the even semesters, February to June 2022. Figure 1 presents student data for the 2018 entry year only.

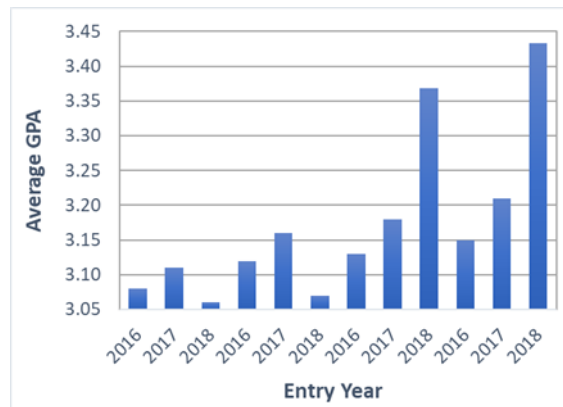


Fig. 2. The average GPA of students enter-year 2016, 2017, and 2018 in the fifth, sixth, seventh, and eighth semesters.

Employment did not differentiate between gender abilities [7]. Female students had the same abilities as male students. The even distribution of scores across gender illustrated it. Curriculum policy also does not distinguish personal things but is based solely on individual skills [10]. Getting used to working increases skills and experience so that MPK scores increase from the first semester to the second semester during the internship.

Figure 2 shows the effect of MPK on students' GPAs. Students who entered 2016 and 2017 did not experience MPKs because the first MPK implementation was carried out in odd semesters (August to December 2021). High scores on the MPK affect the students' average GPA. In the seventh and eighth semesters, students in 2018 experienced a very significant increase in average GPA. It shows a positive pattern for the practice curriculum.

Stakeholders such as employer representatives and senior managers play a role in curriculum formation [15]. The relationship between schools and industry should be closer so that graduates can quickly find work. In an era where industrial development is fully automated, it is necessary to get used to using skills more often before students graduate. Many offers from industry, both at home and abroad, enhance students' skills before they graduate.

There are many challenges in the curriculum, one of which is the economic disability of students [14]. It happens a lot in developing countries that are increasing the industrial sector. The policy is cross-subsidies between the surplus industrial sector and the education field. Technological advances in the industrial sector require high skills. The education sector can only provide it.

The MBKM curriculum is close to the VET curriculum in internships in the final three semesters of undergraduate students. MBKM targets all areas of academic education to prepare internships for students. It takes adjustment and courage to apply the curriculum. The right strategy needs to be done so that the curriculum runs as expected.

4 Conclusion

The MBKM curriculum forces HE to shift from theory dominance to a theory-practice balance. This imposition needs to be clarified among academics in its application. Reducing theoretical courses and replacing them with internship courses is one way to meet the MBKM demands of 20 credits per semester. The expansion of KKN and PLP is an alternative for the student credit load to stay the same.

A high MPK score indicates the effectiveness of internship courses in the MBKM curriculum. The MPK score that increases from the first semester to the second semester shows the addition of skills due to habituation. This increase impacts the average GPA of students, which also increases. A balance of theory-practice needs to be developed to equip students with good skills.

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