

# Bridging Academic Learning to Workplace Skills: Lectures' Perspective to The Role of The Teaching Campus Program in Higher Education

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## ABSTRACT

Against the backdrop of declining literacy and numeracy performance among Indonesian students, as reflected in recent PISA results and exacerbated by learning loss during the COVID-19 pandemic, the Kampus Mengajar (KM) Program was introduced as one of the key initiatives under the Merdeka Belajar–Kampus Merdeka (MBKM) framework to strengthen literacy and numeracy competencies in educational institutions. This study aims to analyze the level of alignment between the implementation of the KM Program and the Learning Outcomes (CPL) of the Physics Education Study Program. The research employed a qualitative method with a case study approach, conducted at a private university in Garut Regency, West Java. The research subjects consisted of four lecturers from the Physics Education Study Program who were purposively selected. Data were collected through structured interviews using a validated interview guide. The findings indicate that although the KM Program aligns with several learning outcomes, certain aspects require adjustment to strengthen its relevance to the scientific context of physics education. Key findings highlight the need for: (1) preparatory training tailored to the specific needs of the Physics Education Study Program, and (2) Focus Group Discussions (FGD) to harmonize perceptions regarding additional assignments and standardized assessment rubrics. The implications of this study underscore the importance of collaboration between KM program implementers and academic programs to optimize the program's impact on the academic and pedagogical competencies of Physics Education students.

**Keywords:** MBKM, Physics Education, Program Kampus Mengajar.

## 1. INTRODUCTION

PISA 2022 specifically defines mathematical literacy as an individual's capacity to think mathematically and to formulate, use, and interpret mathematics in order to solve problems in a variety of real-world contexts (Ambarwati & Ekawati, 2022; Nolka & Sofianopoulou, 2025; Kappassova, et. al., 2025; Truong & Nguyen, 2025). Scientific literacy in PISA 2022 encompasses concepts, procedures, facts, and tools used to describe, explain, and predict phenomena. It enables individuals to understand the role that mathematics plays in the world and to make informed and reasoned judgments and decisions required of constructive, engaged, and reflective citizens in the 21st century (Örnek & Alaam, 2025; Wu, 2025, Yunarti & Amanda, 2022). One of Indonesia's objectives in participating in PISA is to assess students' reading and mathematical

competencies from an early stage (Mala et al., 2023). However, in the 2022 PISA cycle, Indonesia experienced a decline in scores compared to the 2018 results.

The 2022 outcomes were influenced by several factors, one of which was the challenges students encountered during distance learning throughout school closures. During the pandemic, the shift from face-to-face learning to online learning led to educational technology disruption and significant learning loss (Adi, et.al., 2022; Daniel, 2020; Engzell et al., 2021). Most students made little to no significant progress while learning from home, particularly among those from low-income families (Engzell et al., 2021; Katz & Rideout, 2021). Moreover, socio-cultural factors and the socioeconomic status of families also play a significant role in shaping students' reading abilities (Fan & Williams, 2010; Hill & Tyson, 2009; Sengonul, 2022; Vázquez-Cano, et.al., 2020). Other factors include challenges in independent learning at home, as well as teachers' ability to monitor and guide students in online settings and their capacity to use technology effectively.

The low literacy and numeracy skills of Indonesian students were subsequently addressed by the government through an educational policy issued by the Ministry of Education, Culture, Research, and Technology in 2021, which introduced a new system for evaluating and improving educational quality, namely the National Assessment, one of whose key components is the Minimum Competency Assessment (AKM) (Syafriah & Hadi, 2023). In line with findings from the literature, education policy plays a pivotal role in enhancing student literacy and numeracy, particularly within the framework of the Merdeka Curriculum (Kurikulum Merdeka), which emphasizes flexibility, differentiated instruction, and school autonomy. Policies aligned with these core principles have substantial potential to create learning environments conducive to the development of foundational competencies (kartini., et.al., 2025). One of the government's concrete efforts in this direction has been the implementation of curriculum reforms through the Merdeka Belajar initiative, which is applied across all levels of education, from primary schools to higher education institutions.

The Kampus Mengajar Program, as one of the flagship initiatives under the MBKM policy, reflects students' social responsibility in supporting elementary education in both rural and urban contexts, particularly during challenging learning conditions such as those experienced during the COVID-19 pandemic (Apriliani, et.al., 2024; Fuadi & Irdalisa, 2021; Mansyur, et.al., 2024; Suwanti, et.al., 2022; Syah, 2020). The KM Program engages students from various study programs and provides academic recognition equivalent to 20 credits, offering them the opportunity to learn beyond the university environment in order to strengthen their practical skills. Through this program, it is expected that graduates' competencies both soft skills and hard skills will be enhanced, enabling them to become more prepared and relevant to current

demands, as well as to develop into future leaders who are excellent, ethical, and morally grounded (Lhutfi, 2020; Safaringga et al., 2022).

Moreover, the KM Program involves students from various educational backgrounds across universities to assist in teaching and learning processes in schools (Rachman et al., 2021). The KM Program is also designed to support the School Literacy Movement, thereby helping to improve literacy and numeracy in schools with low accreditation levels (Nafi'ah & Hartonoa, 2022; Putra & Supriyatna, 2024; Putri & Astuti, 2022; Rachman et al., 2021). If students' literacy and numeracy skills improve, it is expected to lead to higher performance in the Minimum Competency Assessment, commonly known as AKM (Nafi'ah & Hartonoa, 2022; Rachman et al., 2021). Thus, various efforts have been undertaken by the government to improve students' reading and mathematics skills in Indonesia, ranging from involving Indonesian students in PISA to implementing several breakthroughs through curriculum reforms.

The Kampus Mengajar Program encompasses learning activities across all subjects with a primary focus on literacy and numeracy, technology adaptation, and administrative support for schools. Through these activities, the program provides students with meaningful learning experiences that foster leadership, character development, empathy, and social awareness, while enhancing critical thinking and interdisciplinary collaboration in addressing real-world educational challenges. In this context, students are expected to act as agents of change who inspire school communities, support teachers in sustaining learning processes through the effective use of educational technologies, and assist schools in adapting to digital-based learning environments. Ultimately, the program contributes to national development by strengthening community participation and reinforcing the tangible roles of higher education institutions and students in improving educational quality (Khotimah et al., 2021; Rosita & Damayanti, 2021).

In addition, the program provides students with opportunities to develop leadership, character, empathy, and social awareness, while enhancing critical thinking and collaboration skills through interdisciplinary engagement and real-world problem solving. Ultimately, the Kampus Mengajar Program aims to strengthen the tangible contributions of higher education institutions and students to national development by fostering community participation and improving the effectiveness of learning processes, particularly in emergency and post-pandemic contexts (Anwar, 2021; Khotimah et al., 2021)

In the first cohort of the KM Program, students were placed in elementary schools across Indonesia to assist in teaching and learning activities. The targeted schools were those with a C accreditation rating as well as schools located in remote, disadvantaged, and frontier (3T) areas (Widiansyah & Fitriansyah, 2022). The materials that students were required to prepare included elementary school pedagogy, literacy and numeracy

instruction, ethics and communication in teaching, the Pancasila Student Profile, child protection principles, and others. In the first cohort of the KM Program, the implementation ran smoothly, and the schools showed strong enthusiasm. The activities carried out included teaching and learning processes, technological adaptation in instruction, and assisting teachers in preparing instructional documents. Teaching activities for Grades 4, 5, and 6 were conducted online and supplemented with door-to-door learning, while for Grades 1 and 2, learning was conducted in alternating in-person sessions under strict health protocols. Technological adaptation involved training in the use of WhatsApp, Zoom Meetings, and Google Classroom. Students also assisted teachers in preparing and completing instructional administration, such as developing lesson plans (RPP), creating learning materials, and carrying out evaluation and assessment administration (Hamzah, 2021).

The Kampus Mengajar (KM) Program has made a significant contribution to improving students' literacy, numeracy, and soft skills, as well as supporting learning activities in elementary schools. Based on previous studies Widiyono et al., (2021) dan Shabrina, (2022), this program has successfully integrated the values of the Pancasila Student Profile through activities such as literacy, numeracy, and character education. (Safaringga et al., 2022) and Noerbella, (2022), they also note that the KM Program is capable of increasing students' learning motivation and familiarizing them with technology through AKM simulations. However, several studies highlight weaknesses within the program, such as insufficient coordination between central and local governments (Andriyani et al., 2023), limited infrastructure (Sari et al., 2023), and challenges related to online learning that reduced the program's effectiveness (Safaringga et al., 2022). In addition, although KM contributes to supporting students with special needs (PDBK), Hariyanti et al., (2023) emphasize the need for special assistance teachers to ensure program sustainability. Suyatno et al. (2023) recommend long-term evaluation to determine the continued impact of the Kampus Mengajar Program on the development of teacher professionalism. These findings indicate the importance of thorough preparation for students before joining KM, particularly in pedagogical understanding, technological adaptation, and inclusive approaches aligned with their disciplinary backgrounds.

Previous studies on the Kampus Mengajar Program emphasize the importance of adequate student preparation prior to school placement, particularly in terms of pedagogical competence and technological readiness, as well as the need for long-term evaluation of the program's impact on the professional development of prospective teachers (Suyatno et al., 2023). However, these studies remain largely focused on program implementation and operational effectiveness at the school level, rather than on its academic integration within higher education curricula. Although existing research generally portrays the Kampus Mengajar Program as a policy initiative

that yields positive outcomes for schools and participating students—especially in enhancing literacy, numeracy, and soft skills—there is a noticeable lack of in-depth investigation into the alignment between the substantial credit conversion of the program, study program learning outcomes (CPL), and students' academic readiness. In particular, empirical evidence capturing lecturers' perspectives as key academic stakeholders responsible for curriculum design, credit equivalence, and learning outcome attainment remains scarce, thereby indicating a critical research gap addressed in the present study.

Nevertheless, in-depth studies on KM from the perspective of higher education institutions remain very limited. Previous research has not examined how lecturers serving as Field Supervisors (DPL) interpret the program's relevance to academic curricula, particularly regarding its alignment with the Learning Outcomes (CPL) of study programs. Furthermore, no studies have reviewed the credit conversion process, the alignment of field assignments with course learning outcomes, or the need for discipline-based preparatory training within study programs. Existing research has also not provided insight into how KM supports students' readiness for the teaching profession from the lecturers' standpoint. Drawing on these research gaps, the present study aims to fill this void by analyzing the perceptions of Physics Education lecturers regarding the alignment of the Kampus Mengajar Program with the CPL, its academic relevance, and areas requiring program improvement.

This study is expected to contribute new insights into understanding the relationship between MBKM policies and their implementation at the study program level, an area that has not been widely explored. Specifically, the study aims to: (1) analyze the extent to which the KM Program aligns with the Learning Outcomes (CPL) of the Physics Education Study Program, and (2) identify areas requiring adjustment to ensure that program implementation becomes more relevant to the academic and professional needs of future physics teachers.

## **2. METHODOLOGY**

This study employed a qualitative approach with an intrinsic case study design to gain an in-depth understanding of how lecturers in the Physics Education Study Program interpret the alignment of the Kampus Mengajar (KM) Program with the Learning Outcomes (CPL). This approach was chosen because the phenomenon under investigation is contextual and specific, requiring deep exploration of the experiences and perceptions of participants directly involved in the program's implementation.

The research was conducted within the Physics Education Study Program at a private university in Garut Regency, West Java. Four lecturers participated in the study, selected purposively based on the criteria that they had prior experience as Field Supervisors (DPL) in the KM Program, taught courses potentially eligible for SKS

conversion through KM, and possessed a clear understanding of the curriculum structure and CPL of the Physics Education Study Program. This purposive selection ensured that data were obtained from informants who truly possessed the competence and relevant experience needed for the study's focus.

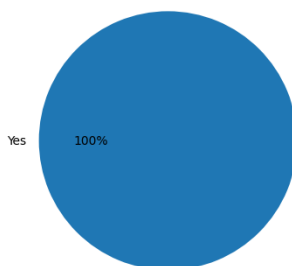
Data were collected through semi-structured interviews using an interview guide validated by experts in physics education and MBKM policy. Interviews were conducted in person, depending on participant availability, and lasted approximately 30–45 minutes. The semi-structured format allowed the researchers to explore deeper insights when participants provided significant or emerging information related to KM implementation. Interview topics included lecturers' understanding of the Kampus Mengajar Program, alignment of KM activities with CPL, experiences with credit conversion, students' preparatory needs, and recommendations for program improvement.

In addition to interviews, document analysis was conducted on CPL, Course Learning Outcomes (CPMK), MBKM policy documents, and credit conversion guidelines. Document analysis strengthened the interpretation of findings and ensured that results did not rely solely on subjective perspectives from participants.

### 3. RESULT AND DISCUSSION

The following are the results of interviews conducted with lecturers who have previously been involved in the KM Program.

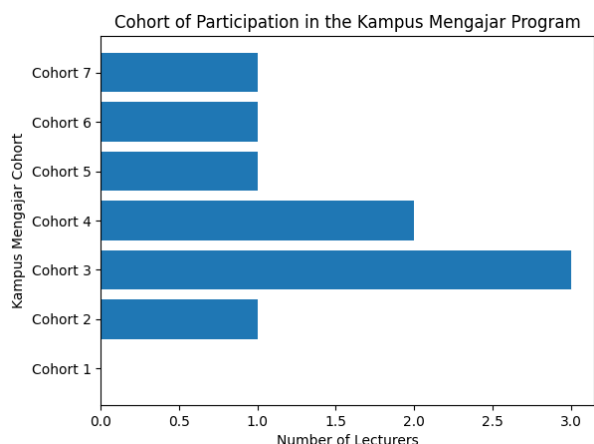
Have You Ever Served as a Field Supervising Lecturer (DPL) in the Kampus Mengajar Program?



**Figure 1.** Percentage of Lecturer Participation as Field Supervising Lecturers (DPL) in the Kampus Mengajar Program

Based on the data presented in Figure 1, all respondents (100%) indicated “Yes,” confirming that they had previously served as Field Supervising Lecturers (DPL) in the Kampus Mengajar Program. Meanwhile, none of the respondents (0%) answered “No.” These results demonstrate that all lecturers participating in the study have had direct experience as DPLs in the Kampus Mengajar Program, ensuring that the interview data obtained are comprehensive and relevant.

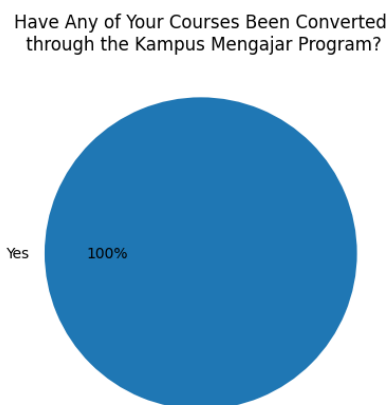
Qualitative analysis of the four participants reveals variations in lecturers' involvement across different cohorts of the Kampus Mengajar Program, with the following patterns identified in Figure 2.



**Figure 2.** Percentage of Lecturer Participation in the Kampus Mengajar Program by Cohort

Based on the data obtained from the four respondents, a pattern of lecturer involvement across different cohorts of the Kampus Mengajar Program was identified. Cohort 4 showed the highest level of participation, with two lecturers (75% of all respondents), suggesting that this period may have been a significant phase in the program's implementation. Meanwhile, Cohorts 2, 5, 6, and 7 each had one lecturer involved (25% per cohort), indicating a relatively even distribution of participation across several program periods.

The data also reveal that none of the respondents participated in Cohort 1, and no respondent reported having never participated in the program at all. These findings demonstrate that all respondents had direct experience as Field Supervising Lecturers (DPL) in the Kampus Mengajar Program, with varying levels of involvement across different cohorts.



**Figure 3.** Percentage of Course Conversions within the Kampus Mengajar Program

Based on the data obtained from the four lecturer respondents, it was identified that all respondents (100%) answered "Yes," indicating that the courses they taught

had previously been converted through the Kampus Mengajar Program. Meanwhile, none of the respondents (0%) selected the “No” option.

Based on the follow-up interview data, four courses were identified as having undergone a conversion process within the Kampus Mengajar Program, namely: (1) Physics Learning Planning, (2) Innovation in Physics Learning, (3) Scientific Writing, and (4) History of Physics. This conversion pattern indicates that the program encompasses a comprehensive range of course types, spanning from pedagogical subjects such as Physics Learning Planning to academically oriented courses such as Scientific Writing. The inclusion of Innovation in Physics Learning suggests an emphasis on creativity in teaching, while the inclusion of the History of Physics reflects recognition of the importance of historical foundations within the discipline. The variety of converted courses illustrates an effort to align students’ field experiences in the Kampus Mengajar Program with multiple competency domains required in physics education, thereby strengthening the connection between theoretical knowledge acquired in class and practical experiences in the field.

Based on the interview results, the data were analyzed by identifying the main themes that emerged from the lecturers’ responses. The lecturers demonstrated a comprehensive understanding of the Merdeka Belajar–Kampus Merdeka (MBKM) policy and the Kampus Mengajar (KM) Program. They recognized the importance of the program in improving literacy and numeracy in low-accredited schools, while also acknowledging its benefits for students’ skill development. This understanding reflects the alignment between the program’s objectives and the broader vision of national education. However, despite its general relevance, lecturers noted specific concerns regarding aspects of physics as a scientific discipline that have not been fully accommodated within the program.

Lecturers perceived that the Kampus Mengajar Program is largely aligned with the Learning Outcomes (CPL) of the Physics Education Study Program, particularly in terms of general and pedagogical competencies. Nevertheless, they identified several mismatches related to the scientific content of physics, indicating the need for further adjustments. Regarding credit conversion, most lecturers suggested that 10 credits would be a reasonable standard, although they emphasized that this recommendation still requires careful evaluation to ensure equivalence with the workload of formal courses.

Several courses were proposed for conversion, such as Innovation in Physics Learning, Learning Media, and Physics Learning Planning, as these were considered relevant to students’ field experiences in the KM Program. To address gaps in learning outcomes, lecturers recommended a variety of additional assignments, including the development of learning media, the preparation of teaching modules, and the writing of scientific articles. These recommendations aim to ensure that students not only gain

practical experience in the field but also continue to fulfill the academic competencies required by the curriculum.

The lecturers agreed that a Focus Group Discussion (FGD) is needed to develop consistent assessment rubrics and to ensure alignment between additional assignments, CPL, and course learning outcomes (CPMK). They also emphasized the need for preparatory training prior to field placement to strengthen students' academic and practical readiness. These findings highlight the importance of collaboration between study programs, lecturers, and MBKM organizers to optimize the benefits of the program while maintaining academic quality. Overall, the analysis underscores the need for continuous alignment between MBKM programs and CPL, as well as stronger coordination through FGDs to ensure consistency in assessment and student preparedness. This is in line with the recommendations of Suyatno et al., (2023) who emphasize the importance of thorough preparation for students before participating in the KM Program, particularly in terms of pedagogical understanding, technological adaptation, and inclusive approaches aligned with their disciplinary background.

The findings show that all lecturer respondents (100%) had experience serving as Field Supervising Lecturers (DPL) in the Kampus Mengajar (KM) Program, with the highest participation occurring in Cohort 3 (75%). The conversion of course credits for subjects such as Physics Learning Planning and Innovation in Physics Learning was considered relevant, although some misalignments were identified in relation to the domain of pure physics. The lecturers agreed that the program is effective in improving students' literacy–numeracy skills and pedagogical competencies; however, they emphasized the need for a Focus Group Discussion (FGD) to develop consistent assessment rubrics, as well as pre-deployment training to ensure alignment between the Learning Outcomes (CPL) and students' field experiences. These findings are in line with the demands of 21st-century learning, which highlight the importance of 4C skills (critical thinking, communication, collaboration, and creativity) and numeracy literacy as foundations for solving contextual problems (Kennedy, & Sundberg, 2020; Thornhill-Miller, et.al., 2023).

The document analysis indicates that several scientific aspects within the Physics Education Study Program have not been fully accommodated through the field activities of the Kampus Mengajar Program. Based on these findings, strengthening through internal study program initiatives is required to ensure optimal alignment between MBKM and the Learning Outcomes (CPL). One program that can be implemented is clinical supervision based preparatory training, which has also been piloted in the student preparation activities for the Kampus Mengajar Program at Universitas Garut. Drawing on the principles of competency-based clinical supervision, such training emphasizes structured practice, direct and formative feedback, needs-based mentoring, and systematic competency development prior to field placement (Hutman et al., 2021).

This preparatory model enables students to enter school settings with more mature pedagogical readiness, clearer professional competencies, and stronger academic coherence.

Extending this perspective, Viscu et al. (2023) emphasize that competency-based supervision frameworks provide a robust mechanism for aligning learning outcomes, training activities, and assessment practices within professional education. A key strength of this approach lies in its explicit mapping of competencies, which enables educational programs to clearly define expected learning outcomes and ensure that experiential learning contributes meaningfully to their achievement. Competency-based preparatory training promotes structured practice, guided reflection, and continuous formative assessment, allowing supervisors to systematically monitor students' progress and provide targeted feedback. In the context of the Kampus Mengajar Program, this framework is particularly relevant for addressing potential misalignments between study program learning outcomes (CPL), substantial credit conversion, and students' pedagogical readiness, thereby strengthening academic accountability and pedagogical coherence in field-based learning.

Through such preparatory training, students not only gain an understanding of the administrative requirements of the Kampus Mengajar Program but also develop deeper insights into the context of physics learning, including the design of instructional materials, the selection of relevant learning media, and the application of literacy and numeracy strategies grounded in science content. To further support this process, study programs may incorporate school-based physics microteaching, workshops on developing teaching modules, and structured credit-conversion guidance sessions to ensure that students' field experiences demonstrate clear equivalence with the Learning Outcomes (CPL) and Course Learning Outcomes (CPMK). Accordingly, a preparatory model grounded in competency-based clinical supervision serves as a strategic mechanism to bridge the objectives of the MBKM policy with the competency requirements of graduates in the Physics Education Study Program, ensuring that field-based experiences are pedagogically meaningful and academically aligned.

Twenty-first-century learning is structured as an effort to prepare the current generation to adapt to rapid technological advancement and the evolving information systems that shape modern society. The Partnership for 21st Century Learning (P21) (2019) states that core knowledge for learners, from elementary to higher education, must be integrated with skill-based learning to ensure success in today's world. Furthermore, P21 emphasizes that 21st-century learning requires mastery of the 4C learning skills: critical thinking, communication, collaboration, and creativity (Nurhayati, Asrin & Dewi<sup>1</sup>, 2022; So-Ariane-Mae, et.al., 2021). The requirements of 21st-century learning emphasize critical thinking skills, the ability to connect knowledge with real-world contexts, proficiency in information technology, as well as effective

communication and collaboration. These skill demands can only be realized when learners possess strong numeracy competencies (AlAli, 2024; Kalyani, 2024).

Efforts to improve students' literacy and numeracy skills carried out by university students in the Kampus Mengajar (KM) Program not only have a positive impact on pupils' academic abilities but also contribute significantly to the development of the students' own soft skills. Through direct field experience, participating students are trained to face various challenges in the learning process, such as adapting to learners with diverse backgrounds and solving problems that arise during interactions with students and teachers (Nguyen, 2022; Purike & Aslan, 2025; Wulandari et al., 2023; Yang, 2024).

In addition, students refine their communication, teamwork, problem-solving, and leadership skills as they collaborate with school stakeholders and fellow university participants. The KM Program provides opportunities for students to apply theoretical knowledge learned in the classroom to real-world practice, thereby enhancing their confidence and their ability to interact and collaborate in professional settings. Thus, beyond improving pupils' literacy and numeracy, the Kampus Mengajar Program also plays a crucial role in developing essential non-technical competencies needed in social life and the 21st-century workplace.

#### **4. CONCLUSION**

This study concludes that the Kampus Mengajar (KM) Program has provided substantial benefits by integrating field experiences with academic learning, particularly in strengthening students' pedagogical skills, literacy–numeracy competencies, and professional readiness. All lecturer respondents demonstrated direct experience as Field Supervising Lecturers (DPL), enabling comprehensive and context-rich insights into the program's implementation. The findings reveal that while the KM Program aligns with several Learning Outcomes (CPL) of the Physics Education Study Program—especially in general and pedagogical competencies—there remain gaps in accommodating discipline-specific scientific content in physics.

Course credit conversions for subjects such as Physics Learning Planning and Innovation in Physics Learning were considered relevant, yet the need for clearer equivalence between field activities and academic workloads persists. Lecturers emphasized the importance of structured pre-deployment training, particularly in pedagogical preparation, technological adaptation, and inclusive approaches, to ensure that students possess adequate readiness before entering the field.

Furthermore, the study highlights the necessity of conducting Focus Group Discussions (FGD) to develop standardized assessment rubrics and harmonize the expectations between study programs and KM organizers. Strengthening internal program initiatives—such as clinical supervision–based preparation, physics-oriented

microteaching, and workshops on teaching material development—can enhance alignment between MBKM initiatives and academic requirements.

Overall, the KM Program holds strong potential to address 21st-century learning demands by fostering 4C skills (critical thinking, communication, collaboration, and creativity) and enhancing literacy–numeracy capabilities. However, its continued effectiveness relies on systematic collaboration, curricular alignment, and continuous refinement to ensure that field experiences meaningfully contribute to achieving the competencies required of future physics teachers.

## REFERENCES

- Adi Badiozaman, I. F., Leong, H. J., & Wong, W. (2022). Embracing educational disruption: A case study in making the shift to a remote learning environment. *Journal of Applied Research in Higher Education*, 14(1), 1-15.
- AlAli, R. (2024). Enhancing 21st century skills through integrated STEM education using project-oriented problem-based learning. *Geo Journal of Tourism and Geosites*, 53(2), 421-430.
- Ambarwati, B. T., & Ekawati, R. (2022). Analisis literasi matematika siswa dalam menyelesaikan soal higher order thinking skills (hots) proporsi. *MATHEdunesa*, 11(2).
- Andriyani, H., Zubair, M., Alqadri, B., & Mustari, M. (2023). Implementasi Program Kampus Mengajar Angkatan 4 dan Dampaknya Terhadap Budaya Literasi Siswa di SDN 43 Cakranegara. 8, 452–459.
- Anwar, R. N. (2021). Pelaksanaan kampus mengajar angkatan 1 program merdeka belajar kampus merdeka di sekolah dasar. *Jurnal pendidikan dan kewirausahaan*, 9(1), 210-219.
- Daniel, S. J. (2020). Education and the COVID-19 pandemic. *Prospects*, 49(1), 91–96.
- Engzell, P., Frey, A., & Verhagen, M. D. (2021). Learning loss due to school closures during the COVID-19 pandemic. <https://doi.org/10.1073/pnas.2022376118/-/DCSupplemental.y>
- Fan, W., & Williams, C. M. (2010). The effects of parental involvement on students' academic self-efficacy, engagement and intrinsic motivation. *Educational Psychology*, 30(1), 53–74.
- Fuadi, T. M., & Irdalisa, I. (2021). Merdeka belajar kampus merdeka: application in education faculty. *Al-Ishlah: Jurnal Pendidikan*, 13(3), 2747-2756
- Hamzah, R. A. (2021). Pelaksanaan kampus mengajar angkatan I program merdeka belajar kemdikbud di sekolah dasar. *Dedikasi: Jurnal Pengabdian Kepada Masyarakat*, 1(2), 1–8.
- Hariyanti, H., Permadi, G. C., Kartasmita, S., Sari, F. A., Alrafni, A., & Suryanef, S. (2023). Kampus mengajar angkatan 4 dan peningkatan literasi numerasi peserta didik berkebutuhan khusus. *JMM (Jurnal Masyarakat Mandiri)*, 7(2), 1482–1496.
- Hill, N. E., & Tyson, D. F. (2009). Assessment of the Strategies That Promote Achievement. 45(3), 740–763. <https://doi.org/10.1037/a0015362>. Parental
- Hutman, H., Enyedy, K., Ellis, M., Goodyear, R., Falender, C., Campos, A., ... & Zetzer, H. (2021). Training public sector clinicians in competency-based clinical supervision: Methods, curriculum, and lessons learned. *Journal of contemporary psychotherapy*, 51(3), 227-237.
- Kalyani, L. K. (2024). The role of technology in education: Enhancing learning outcomes and 21st century skills. *International journal of scientific research in modern science and technology*, 3(4), 05-10.
- Kappassova, S., Abylkassymova, A., Bulut, U., Zykrina, S., Zhumagulova, Z., & Balta, N. (2025). Mathematical literacy and its influencing factors: A decade of research findings (2015-2024). *Eurasia Journal of Mathematics, Science and Technology Education*, 21(7), em2671.
- Kartini, E., Darmawan, D., Omonovich, K. D., & Kibrio, B. (2025). The Role of Policy in Improving Student Literacy and Numeracy in the Era of the Merdeka Curriculum. *Journal of Innovation and Research in Primary Education*, 4(3), 476-484.
- Katz, V., & Rideout, V. (2021). Learning at Home While Under-Connected: Lower-Income Families during the COVID-19 Pandemic. *New America*.
- Kennedy, T. J., & Sundberg, C. W. (2020). 21st century skills. In *Science education in theory and practice: An introductory guide to learning theory* (pp. 479-496). Cham: Springer International Publishing.
- Khotimah, N. R., Sriwijaya, U., Palembang-prabumulih, J. R., Fisika, P., Metro, U. M., Ki, J., Dewantara, H.,

- Kota, N., Pendidikan, J., Kampus, P., & Kampus, M. (2021). Pelaksanaan Program Kampus Mengajar di SD Negeri 014 Palembang Sumatera Selatan Pandemi Covid-19 yang menyerang berbagai Negara termasuk Indonesia telah ( MBKM ) yang memberikan hak belajar mahasiswa selama tiga semester di luar program studi pandemi , terutama untuk SD di daerah 3T atau minimal Akreditasi C . mata pelajaran yang berfokus literasi dan numerasi , adaptasi teknologi dan bantuan. 5(2), 194–204.
- Lhutfi, I., & Mardiani, R. (2020). Merdeka Belajar-Kampus Merdeka Policy: How Does It Affect the Sustainability on Accounting Education in Indonesia?. *Dinamika Pendidikan*, 15(2), 243-253.
- Mala, A., Purwatiningsih, B., & Ghozali, S. (2023). Implementasi Pengembangan Jiwa Literasi Entrepreneurship Pada Siswa Sekolah Dasar. 5(2), 120–144.
- Mansyur, U., Aksel, M., Hijrah, H., Nensi, N., & Pratama, A. (2024). Implementasi Program Kampus Mengajar di Sekolah Dasar sebagai Upaya Mewujudkan Merdeka Belajar-Kampus Merdeka (MBKM). *Intisari: Jurnal Inovasi Pengabdian Masyarakat*, 2(1), 39-46.
- Nafi'ah, B. A., & Hartonoa, N. C. P. (2022). Asesmen kompetensi minimum (akm) kelas sekolah dasar sebagai sarana evaluasi kemampuan literasi dan numerasi siswa. *Jurnal Pendidikan Dasar*, 13(2).
- Nguyen, N. H., Tran, T. L. N., Nguyen, L. T., Nguyen, T. A., & Nguyen, M. T. (2022). The interaction patterns of pandemic-initiated online teaching: How teachers adapted. *System*, 105, 102755.
- Noerbella, D. (2022). Implementasi program kampus mengajar angkatan 2 dalam meningkatkan kompetensi literasi dan numerasi peserta didik. *Jurnal Cakrawala Pendas*, 8(2), 480–489.
- Nolka, E., & Sofianopoulou, C. (2025). Constructing mathematical literacy problems and assessing students' solving abilities. *International Journal of Studies in Education and Science*, 6(2), 128-148.
- Nurhayati, Asrin, & Dewi1, N. K. (2022). Analisis Kemampuan Numerasi Siswa Kelas Tinggi dalam Penyelesaian Soal Pada Materi Geometri di SDN 1 Teniga. *Jurnal Llmiah Profesi Pendidikan*, 21, 403–409.
- Örnek, F., & Alaam, S. (2025). Revisiting science education frameworks: Implications from PISA literacy findings in Türkiye, China, and OECD countries. *Journal of Mathematics and Science Teacher*, 5(4).
- Purike, E., & Aslan, A. (2025). A comparison of the effectiveness of digital and traditional learning in developing countries. *Indonesian Journal of Education (INJOE)*, 4(2), 179-186.
- Putra, A., & Supriyatna, D. (2024). Pengertian Dasar Mekanika Fluida : Dinamika Fluida Dalam Kehidupan Sehari-Hari. *Kohesi: Jurnal Multidisiplin Saintek Volume*, 3(2), 81–86.
- Putri, D. V., & Astuti, E. (2022). Implementasi Program Kerja Literasi dan Numerasi Pada Kampus Mengajar 6 di SDN 01 Kanigoro. *FIPA: Forum Ilmiah Pendidikan Akuntansi*, 10(2), 15–24.
- Rachman, B. A., Fidaus, F. S., Mufidah, N. L., & Sadiyah, H. (2021). Peningkatan Kemampuan Literasi dan Numerasi Peserta Didik Melalui Program Kampus Mengajar Angkatan 2. 5(6), 1535–1541.
- Rosita, D. A., & Damayanti, R. (2021). Pelaksanaan program kampus mengajar perintis pada sekolah dasar terdampak pandemi covid-19. *Prima Magistra: Jurnal Ilmiah Kependidikan*, 2(1), 42-49.
- Safaringga, V., Lestari, W. D., & Aeni, A. N. (2022). Implementasi program kampus mengajar untuk meningkatkan motivasi belajar siswa di sekolah dasar. *Jurnal Basicedu*, 6(3), 3514–3525.
- Shabrina, L. M. (2022). Kegiatan kampus mengajar dalam meningkatkan keterampilan literasi dan numerasi siswa sekolah dasar. *Jurnal Basicedu*, 6(1), 916–924.
- Suyatno, S., Wantini, W., Pambudi, D. I., Muqowim, M., Tinus, A., & Patimah, L. (2023). Developing pre-service teachers' professionalism by sharing and receiving experiences in the kampus mengajar program. *Education Sciences*, 13(2), 143.
- Syafriah, N., & Hadi, M. S. (2023). Analisis Kemampuan Numerasi dalam Menyelesaikan Soal Asesmen Kompetensi Minimum ( Akm ) Siswa Kelas VIII SMPN 134 Jakarta. 7(1), 75–91.
- Sengonul, T. (2022). A Review of the Relationship between Parental Involvement and Children's Academic Achievement and the Role of Family Socioeconomic Status in This Relationship. *Pegem Journal of Education and Instruction*, 12(2), 32-57.
- So-Ariane-Mae, T. K., Samiano, J. R. D., Buban, R. N., & Errabo, D. D. R. (2021, June). Effects of Online Distance Learning on the Acquisition of 4Cs: Communication, Collaboration, Critical Thinking, and Creativity. In *2021 IEEE International Conference on Educational Technology (ICET)* (pp. 70-74). IEEE.
- Suwanti, V., Suastika, I. K., Ferdiani, R. D., Harianto, W., & Ketut Suastika, I. (2022). Analisis dampak implementasi program mbkm kampus mengajar pada persepsi mahasiswa. *JURNAL PAJAR*

- (Pendidikan Dan Pengajaran), 6(3), 814-822.
- Syah, R. H. (2020). Dampak covid-19 pada pendidikan di Indonesia: sekolah, keterampilan, dan proses pembelajaran. *SALAM: Jurnal Sosial Dan Budaya Syar-I*, 7(5).
- Thornhill-Miller, B., Camarda, A., Mercier, M., Burkhardt, J. M., Morisseau, T., Bourgeois-Bougrine, S., ... & Lubart, T. (2023). Creativity, critical thinking, communication, and collaboration: Assessment, certification, and promotion of 21st century skills for the future of work and education. *Journal of Intelligence*, 11(3), 54.
- Truong, H. H., & Nguyen, P. C. (2025). Mathematical literacy: Parallels between the PISA mathematics framework and Vietnam's mathematics curriculum. *The Curriculum Journal*.
- Vázquez-Cano, E., De la Calle-Cabrera, A. M., Hervás-Gómez, C., & López-Meneses, E. (2020). Socio-Family Context and Its Influence on Students' PISA Reading Performance Scores: Evidence from Three Countries in Three Continents. *Educational Sciences: Theory and Practice*, 20(2), 50-62.
- Viscu, L. I., Cădariu, I. E., & Watkins Jr, C. E. (2023). Competency based training for clinical supervisors. Elsevier.
- Widiansyah, A., & Fitriansyah, F. (2022). Implementasi Kampus Mengajar melalui Program. In *Prosiding Seminar Nasional Penelitian LPPM UMJ.*, 1–8.
- Widiyono, A., Irfana, S., & Firdausia, K. (2021). Implementasi merdeka belajar melalui kampus mengajar perintis di sekolah dasar. *Metodik Didaktik*, 16(2), 102–107.
- Wulandari, D. A., L. M. N., & Suzanti, F. (2023). Pengembangan E-Lkpd Berbasis Guided Inquiry Pada Materi Keanekaragaman Hayati Untuk Siswa Kelas X Sma. *Biogenesis*, 19(2), 135. <https://doi.org/10.31258/biogenesis.19.2.135-153>
- Wu, Y. (2025). Analyzing Scientific Literacy in Asia's Top Five PISA 2022 Performers Using Hierarchical Linear Modeling and Bourdieu's Theory of Practice. *Asia-Pacific Science Education*, 1(aop), 1-36.
- Yang, C. (2024). Adapting teaching methods to accommodate diverse learning styles in education. *Journal of Higher Education Research*, 6, 535.
- Yunarti, T., & Amanda, A. (2022). Pentingnya kemampuan numerasi bagi siswa. *Seminar Nasional Pembelajaran Matematika, Sains Dan Teknologi*, 2(1), 44–48.