Interconnecting Equitable and Prosperous Teaching-Learning Transitions and Transformations within the Digital Learning Framework

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Abstract

Studies on the main problems of Indonesian Education essentially highlight the educator's capability, professionality, and creativity. The fundamental problem lies in the reproduction and recruitment of educators themselves from the start. The problem becomes more complicated due to the acceleration of digital learning-based learning management systems synchronously/asynchronously, particularly in primary education as the foundation. This is also an observation and concept for the Kurikulum Merdeka implementation to overcome the education crisis through Merdeka Belajar policies, especially the Guru-Sekolah Penggerak program, the Merdeka Berbudaya media, the Merdeka Mengajar platform, and the Kampus Mengajar pattern. Such conditions are the focus of the study to assess opportunities for digital transformation in the teaching and learning process in elementary school and PGSD based on educators' perspectives on the students' characteristics and tendencies. This study uses a diagnostic case study method to examine the results of reports from related research institutions representatively and interpretively using internet searching techniques to be analyzed using critical discourse analysis to maintain the data commensurability. The report from the RISE Program in Indonesia, INOVASI, UNICEF Indonesia, SMERU Research Institute, and APJII then emphasized that strengthening educator competency, deepening curriculum flexibility, developing digital skills of educators and students, as well as improving teaching and learning platforms and school digital connectivity that focuses on an equitable education ecosystem is a challenge to respond the world education transformation. The results conform with OECD and UNESCO recommendations for embodying an equal and prosperous educational future. Hence, the Merdeka Belajar transition in Dikdas must become the basis for joint study to ensure the direction and realm of the transformation of Indonesian education.

Keywords: digital learning; elementary school; learning-teaching; transforming education

Introduction

The educational crisis during the Covid-19 pandemic has further exposed the gap in the teaching and learning process and outcomes, from the level between regions in a country to between underdeveloped, developing, and developed countries. At the same time, these situations and conditions also make us aware that the quality of education is a crucial foundation for the future of humans and the world, in addition to health and economic issues. Harari's opening Homo Deus: The Future of Humanity (2018) could be a comprehensive reference to review the real challenges of digital technology transformation on education systems around the world, which is also his observation regarding the New Agenda for Humanity (pp. 1-78). Harari's observation focuses on the question of what will be the focus of humans if the hope for a prosperous, healthy, and peaceful world has been achieved worldwide. Moreover, human mastery of digital technology in various aspects of life to the point of giving rise to augmented reality (AR), virtual reality (VR), and artificial intelligence (AI) further deepens the core of the question. However, Harari continued, we first need to reflect on the famine, plague, and violence that still plague us before exploring the main ambitions of future humans to control death, ensure happiness, and achieve divinity through biotechnology and nanotechnology engineering. In line with that, Mukherjee in closing Part Two: In the Sum of the Parts, There

Are Only Parts on From Genes to Genesis (pp. 235-259) to enter Part Three: "The Geneticist's Dream" from Genes: Journey to the Center of Life (2021), tries to stretch a horizon about technological transformation that can rewrite the future of human history regarding the inheritance of traits, identity, and disease. This digital technological transformation will change everything globally, especially the world of education (awareness of human potential).

The context of the opportunities for Merdeka Belajar policies that seek to respond to the development of digital learning to renew Indonesian Education lies in the equality and welfare of educators and learners in Basic Education, especially as a foundation. In essence, this is the ideal of the Opening of the 1945 Constitution of the Republic of Indonesia in Paragraph Four that the independence of the Republic of Indonesia is based on the goal "... to protect all Indonesian people and all Indonesian blood and to advance public welfare, educate the nation's life, and participate in implementing world order based on freedom, lasting peace, and social justice ...". This matter is also the direction of the sustainable and resilient education policy of the Organisation for Economic Co-operation and Development (OECD) through The Future of Education and Skills 2030 which began in 2015 and the United Nations Educational, Scientific and Cultural Organization (UNESCO) through The Future Framework on Culture and Arts Education throughout 2023 to be inaugurated in early 2024, in ensuring the future of education for all human beings according to their respective socio-cultural characters.

Reports from the Research on Improving Systems of Education (RISE) Program in Indonesia and the SMERU Research Institute have also revealed that the fundamental problem of Elementary Education in Indonesia in the form of low capability, professionalism, and creativity of Elementary School teachers stems from the process of teacher reproduction and recruitment itself within the scope of the Study Program of Elementary School Teacher Education (PGSD). This problem occurs more in areas outside Java, where equality and welfare are other issues. In this case, the problem includes accessibility to educational services and facilities that widened the educational gap during the Covid-19 pandemic regarding the digital mastery of elementary school teachers and students and internet network connectivity. The United Nations Children's Emergency Fund (UNICEF)

Indonesia (2021) analysis of the digital learning landscape in Indonesia emphasizes this problem, which illustrates the lack of awareness, understanding, and mastery of interactive and integrative digital content and platforms, limited access to networks and internet quotas with adequate devices in the regions, and the disparity in digital skills between learners and educators. Meanwhile, the survey results of the Indonesian Internet Service Providers Association (APJII) in the 2022 Indonesian Internet Profile (APJII, 2022) provided a special report on the education sector during the implementation of Learning from Home (BDR) with respondents specifically in Java Island have sufficiently illustrated the quality of the application of e-learning based on the learning management system (LMS) via the available learning platform. However, if we examine the data further, of course, the reading of the quality must be observed from the completeness of the digital teaching and learning tools, the good digital skills of teachers and students, and the smooth connectivity of the internet network so that it can support the implementation of the teaching and learning process interactively and integratively.

The results of reports and surveys that position Java as a comparative case study must be examined more carefully. The fulfilment and equal distribution of digital devices and internet connectivity are the keys to teachers' digital skills, and students are also influenced by their level of welfare. In addition, the limitations of applying digital media and platforms are still a separate problem for the implementation of e-learning synchronously/asynchronously for its optimization in all regions evenly and equally needs to be considered seriously (Rumi et al., 2022). This optimization certainly emphasizes a total evaluation in order to be able to carry out the transition of equalizing knowledge and improving skills for the main requirements for the implementation of digital learning holistically (Usman & Kurniasih, 2021). The Strategic Plan of the Ministry of Education and Culture 2020-2024 (Kemendikbud, 2020a) is clarified in the draft of the Indonesian Education Roadmap 2020-2035 (Kemendikbud, 2020b) in this case emphasizes that "...to realize a sovereign, independent, and individual Advanced Indonesia through the creation of Pancasila Students who are critical thinkers, creative, independent, faithful, devoted to God Almighty, and have noble morals, work together, and are globally diverse" must be realized by improving and

increasing the completeness of infrastructure and technology; flexible policies, procedures, and funding; the creation of leadership, society, and culture; and the differentiation of curriculum, pedagogy, and assessment. The basic objectives then underlie the focus of policies and program priorities of the Ministry of Education, Culture, Research, and Technology through equal access and quality education services at all levels and regions, improving the quality of teaching and learning that focuses on the continuity of learner growth and development, strengthening learner character, advancing and preserving cultural heritage or local wisdom, and optimizing a participatory, transparent, and accountable education and cultural governance system.

Through the policy focus and program priorities that welcome the Vision of Golden Indonesia 2045, the education system and teaching and learning process that are equal and prosperous must become a shared focus synergistically and harmoniously. The hope to realise Indonesia as a "Sovereign, Advanced, and Sustainable Archipelago State" has been designed in seventeen development directions that are divided into three stages: (1) Transformation of Indonesia, including Social, Economic, and Governance Transformation; (2) Transformation Foundation, containing the Supremacy of Law, Stability, and Indonesian Leadership as well as Socio-Cultural and Ecological Resilience; (3) Transformation Implementation Framework, consisting of Equitable and Just Regional Development, Quality and Environmentally Friendly Facilities and Infrastructure, and Development Continuity (indonesia2045.go.id). The seventeen development directions in the 2020-2045 National Long-Term Development Plan (RPJPN) are also based on achieving an equal and prosperous community life through quality education services with the latest science and technology. The process of equal and prosperous teaching and learning has long been the target of world education through the discourse of sustainability (sustainable and resilient) recommended by the OECD and UNESCO.

Indonesia to the future of education is trying to meet the requirements to become one of the OECD member countries through the transformation of the education system and quality teaching and learning process in order to provide opportunities for every child to gain access to the best educators, curriculum, and schools (Wiradji, 2023). However, Indonesia's readiness still needs to improve the quality of education that is evenly distributed across all regions to increase the growth of prosperous Indonesian human capital (Tjahjadi, 2023). This core issue underlies the Merdeka Belajar Kampus Merdeka (MBKM) policies, especially the Teacher-School Mover program, the Merdeka Berbudaya media, and the Merdeka Mengajar platform, as well as the Teaching Practitioner and Teaching Campus patterns as the focus of this diagnostic study. The latest 26th edition of Merdeka Belajar also finally emphasizes the transformation of national standards and accreditation of Higher Education to provide a wider and freer space in improving the quality of the achievements of the Tridharma of Higher Education as a milestone in the ecosystem for strengthening the education system and the transformative teaching and learning process transitionally.

The contextual transformation of the education system and the essential teaching and learning process in the era of digital transformation in the diagnostic study of Rumi et al. previously also reviewed the opportunities for Merdeka Belajar in Elementary Schools and PGSD from the perspective of Open Educational Resources (OER) based on LMS based on the UNESCO declaration since 2012 to expand access to quality education. The diagnostic study focused on examining the role of educators in embodying Merdeka Belajar through a heutagogical approach by looking at the challenges and hopes of optimizing e-learning during the Covid-19 pandemic in order to examine the opportunities for implementing digital learning in its entirety in Indonesia. This follow-up diagnostic study then focused more on the context of educators' awareness and understanding of the Merdeka Belajar policy in realizing that a teaching and learning process is oriented toward the character and needs of learners. This fulfilment is based on five priority actions in combating the education crisis according to the RISE Program in Indonesia: 1) Committing to the basis of learning itself in terms of literacy and numeracy; 2) Measuring the level of learning processes and outcomes in elementary education, especially periodically and sustainably; 3) Aligning the education system (curriculum, evaluation, and teaching) and the basic objectives of learning; 4) Supporting teachers in developing and improving the quality

and professionalism of their teaching; and 5) Adopting an adaptive approach that can be implemented to optimize the learning context effectively (Princhett, 2022). Thus, this diagnostic study examines the transition from optimizing e-learning to implementing digital learning towards the transformation of Indonesian Basic Education, referring to five priority actions of equitable and prosperous learning and teaching for the future of Indonesian Education.

Method

This study uses a diagnostic case study method based on a qualitative framework to analyze reports or survey data related to the focus of the study in Indonesian Basic Education on the challenges of digital transformation in the world of education and future education policies. The design of this diagnostic study refers to Creswell and Guetterman (2019, pp. 16-18), focused on collecting, analyzing, and studying related data to be discursively interconnected to describe phenomena or findings on the main problems of the study focus. Gerring (2017, pp. 98-100) emphasizes that diagnostic cases function intensively to confirm and identify data interrelationships. The collection of this diagnostic study database uses internet searching techniques to trace the background, methods, and study data that underlie the results of related reports and surveys. In internet-based data collection, Hewson (2017, pp. 58-59) and Marotzki et al. (2014, pp. 461-462) stated that the use of internet data provider sources or associations for various research designs has become an inter-method for collecting data easily and openly which must then be examined essentially and contextually according to the direction of the research.

This diagnostic study then sorts data from reports and surveys from the RISE program in Indonesia, SMERU, INOVASI, UNICEF Indonesia, PISA, and APJII in the period 2020-2023 (during and after the Covid-19 pandemic) as a basis for examining the main problems. The sorting and processing of the study database is based on the edition of independent learning policies (merdekabelajar.kemdikbud.go.id/utama) on the transition and transformation of digital learning in elementary schools and PGSD in responding to the future of sustainable and resilient World Education from the perspective of The Future of Education and Skills 2030 by OECD and The Future Framework on Culture and Arts Education and Transforming Education Summit by UNESCO. The processed internet data is given patterns and codes according to the database, interconnected according to data interrelationships, and classified according to the depth and breadth of data description to then represent the initial findings while verifying the database itself and interpreting it with related and current articles that lead to the focus of the problem (Creswell, 2013, pp. 182-191; Creswell & Guetterman, 2019, pp. 263-265). By referring to Creswell and Guetterman (2019) and Flick (2018), this diagnostic study also maintains the commensurability (equivalence and balance) of the study data context in order to ensure the results of its discursive interpretation.

Results dan Discussion

Implementing the *Kurikulum Merdeka* (IKM) to address the educational crisis during the COVID-19 pandemic presents an intriguing case study in examining the transition from e-learning to optimized digital learning. This shift, particularly in rural areas, reflects a transformative change on a certain scale. However, reports and surveys by the RISE Program in Indonesia and SMERU reveal increasing disparities in teaching and learning processes within the framework of LMS-based e-learning, both synchronously and asynchronously. A similar survey by APJII during the early stages of Indonesia's education transition also found that awareness and understanding among educators regarding its application, particularly in elementary schools and Primary School Teacher Education (PGSD) programs—the focus of this diagnostic study—remained low in rural areas but relatively high in Java. This transition should ideally serve as both an evaluation and an acceleration to respond to the digital learning transformation aligned with global educational directions, particularly as envisioned by OECD and UNESCO in ensuring sustainable and resilient global education.

Based on the latest data from the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) websites related to IKM through the *Merdeka Belajar Kampus Merdeka* (MBKM) program, a total of 130,648 (87.7%) elementary schools or their equivalents out of 148,975 public/private elementary schools have adopted IKM since its limited implementation in 2021 at pioneering Sekolah Penggerak (SP) and its independent implementation in 2022, aiming

for nationwide application across all educational units by 2024. Meanwhile, the number of SP schools initially piloted the IKM constitutes 6,039, representing 4.05% of all elementary schools. Meanwhile, the number of SP schools initially piloted IKM accounts for 6,039 (4.05%) of all elementary schools. Additionally, out of a total of 1,480,912 elementary school teachers nationwide, according to the Educational Data Center (Dapodik) synchronized in the last semester of 2023, 1,853 (0.12%) have graduated from training as Guru Penggerak (GP). As a key indicator of MBKM acceleration, the accessibility level of the Merdeka Mengajar Platform (PMM) in 52 elementary schools with SP status from Cohort I in South Sulawesi Province was recorded at 73.39% based on the number of GP users in each SP, with an evaluation score of 60.75%. This evaluation is based on the number of actions performed with verified similarity and real implementations using the main features of the PMM self-learning training menu: watching self-training videos, days of study participation, accessing reference pages, and attending webinars. The high level of GP-SP penetration in applying PMM also significantly influences the accessibility of PMM's teaching tools and assessment menus, reaching 97.12%. Nationally, the penetration rate for self-learning training and PMM teaching-learning device accessibility is likely higher, especially in urban areas. However, it is essential to scrutinize regions where these figures might be lower or even extremely low.

To date, there have been 26 episodes of MBKM policies aimed at supporting the stages and strategies of its implementation in Early Childhood Education (PAUD), Basic Education (Dikdas), Secondary Education (Dikmen), and Higher Education (Dikti). These MBKM episodes represent efforts to optimize and accelerate the transformation of Indonesia's education system. This diagnostic study specifically examines the achievement of GP-SP programs, PMM accessibility in elementary schools, and the Campus Teaching (Kampus Mengajar, KM) activities of PGSD students in elementary schools. Furthermore, PMM and the Merdeka Cultural Media (MMB) through the Indonesiana platform and channel represent a simple approach to digital transformation in contextual and essential teaching-learning processes. These initiatives ensure the strengthening of the Pancasila Student Profile Project (P5), which aligns with the vision of Merdeka Belajar, emphasizing mastery in literacy and numeracy. The KM policy focuses on how students, particularly those in PGSD, can actualize these competencies at each educational level, especially in elementary schools. Since its inception in 2020, the KM program has reached its sixth cohort, involving 21,442 students selected and officially designated as KM-6 participants. Among these, 4,279 students (20%) are from PGSD programs across Indonesia, with the largest numbers coming from three education-oriented universities: UNM, UPI, and UNNES. The program has distributed assignments across 3,180 elementary schools, 950 junior high schools, and 234 vocational schools.

The aspiration to fully realize the transformation of LMS-based digital learning in a synchronous/asynchronous manner, coupled with the reports and survey results on e-learning optimization during and after the Covid-19 pandemic, represents a significant challenge for the future of Indonesian education. The Four Series of *Studi Kesenjangan Pembelajaran oleh Inovasi untuk Anak Sekolah Indonesia* - Learning Gap Studies by Innovation for Indonesian School Children (INOVASI) serves as the primary reference in addressing the challenges of transforming basic education in Indonesia by comparing data on GP-SP achievements in PMM and the distribution of KM. The Future of Education and Skills 2030, the Future Framework on Culture and Arts Education, and the Transforming Education Summit outline the intended direction of educational transformation. These frameworks aim to sustainably achieve equitable and prosperous teaching and learning processes for educators and learners in elementary schools and PGSD programs. The Merdeka Belajar policies discussed in this diagnostic study are fundamentally aimed not only at integrating studies and policies to accelerate digitalization in teaching and learning processes but also at capitalizing on the capabilities, professionalism, and creativity of educators, primarily through the GP-SP and PMM programs (including MMB) and KM.

On the other hand, findings from the national survey *Arah Baru Pendidikan Indonesia: Sikap Publik Terhadap Kebijakan Kemendikbudristek* (Indikator, 2022), which focused on the Merdeka Belajar policies as analyzed in the above diagnostic study, revealed

the following results based on a sample of 1,520 respondents representing all Indonesians aged 17 and above: 42.8% rated the reopening of face-to-face learning as highly beneficial; 42% found the *Kartu Indonesia Pintar* (Smart Indonesia Card) for Merdeka Studies beneficial; 40.6% considered the internet quota assistance provided by Kemendikbudristek beneficial; 65.05% rated the training for Guru Penggerak (GP) as moderately beneficial; 63.9% found the use of the *Platform Merdeka Mengajar* (PMM) moderately beneficial; and 14.4% rated the National Assessment as less beneficial. The percentages for each category—highly beneficial, moderately beneficial, and less beneficial—were calculated based on the total sample and are interconnected. This survey, conducted from April 7–12, 2022, after the COVID-19 pandemic, offers insights into the public's perception and needs regarding access to and services within the MBKM framework. The following outlines the key policy opportunities within MBKM aimed at achieving an equitable and prosperous future for Indonesian education while addressing the challenges of digital transformation in the framework of digital learning:

The Educators' Awareness and Understanding of the Merdeka Belajar Policy in the Learner-Oriented Teaching and Learning Process

The main issue of the low quality of Indonesia's basic education, as highlighted in the 2020-2024 Strategic Plan of the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) and the 2020-2035 Indonesian Education Roadmap, is rooted in several factors. These include pedagogical gaps (linked to heutagogical approaches in response to digital learning) among elementary school teachers, which should be related to PGSD lecturers who train prospective elementary school teachers; damaged school infrastructure; a rigid curriculum (eventually replaced by IKM); and misguided policies in addressing these three core issues. Kemendikbudristek (2022) revealed disparities in teaching and learning processes from the basic education level (Dikdas), where educators often treat learners as incapable of making decisions or expressing opinions regarding their learning process. Such conditions underpin the Merdeka Belajar policy, which aims to establish a learner-centred teaching and learning process.

The learner-centred approach, a key discourse in Merdeka Belajar (MB), is recognized under various terms with similar contexts and essences. These include Differentiated Learning (particularly by C. A. Tomlinson), Heutagogy or Self-Determined Learning (by C. Kenyon and S. Hase), and Learning How to Learn (primarily by B. Oakley). These approaches, emerging at different times, serve as foundational methods to actualize the learner-centred teaching and learning process. In the diagnostic study summarized by Rumi et al. (2022), the emphasis is placed on the equitable connectivity penetration of educators intensively and comprehensively across all regions. It is essential to apply learning platforms (PMM in this context) to continuously update their pedagogical knowledge and skills through a heutagogical approach, particularly in digital technology transformation in education.

Furthermore, Rumi et al. (2022), referencing the heutagogical approach of Kenyon and Hase, state that "...the shift from pedagogy and andragogy to heutagogy plays a central role in comprehensively actualizing Merdeka Belajar. The availability of adequate devices and accessible internet networks must also be expanded in rural areas" (Rumi, 2022, p. 242). From the heutagogical perspective of Hase and Kenyon (2013), the teaching and learning process prioritizes learners' freedom and independence to explore what they want to learn further. This exploration is enabled by transforming digital technology into personalized platforms (linked to Web 3.0) powered by AI algorithms, providing a high-quality and interconnected learning experience anytime and anywhere.

However, given the spotlight on the quality of education and digital connectivity in Indonesia, the approaches and transformations promoted through MBKM must be scrutinized for the quality of their quantitative achievements. *First Text*: The learner-centred approach (notably the recommended project-based learning, abbreviated as PjBL) may need to be more suitable, or even incompatible, with the characteristics and needs of students at the basic education (Dikdas) level. Various studies have shown that this approach might be more appropriate for higher education (Dikti). Basic education students often still require direct guidance from educators, particularly when considering the socioeconomic status of students and educators in providing learning facilities (Aditia, 2023). Moreover, Aditia's review highlights data showing that middle school students experienced a significant decline in numeracy scores, even in traditionally high-

scoring PISA countries such as Finland, Canada, and New Zealand. It occurred during the implementation of learner-centred learning from 2003 to 2012, underscoring the need to strengthen educators' capabilities, professionalism, and creativity to intensively and comprehensively guide and accompany learners. *Second Text*: Digital transformation in education has radically reshaped the approaches and strategies in teaching and learning between educators and learners. The proliferation of generative AI, particularly ChatGPT, in teaching and learning in higher education (Dikti), was highlighted in a student survey conducted in Australia between late April and May 2023. The survey revealed confusion and ethical concerns, with 41% of users and 85% of non-users expressing negative sentiments toward ChatGPT (Skeat & Ziebell, 2023). Skeat and Ziebell's survey focused on students' negative perspectives regarding ChatGPT usage, particularly related to academic dishonesty and distrust in the reliability of answers. However, some students found ChatGPT highly beneficial, especially in providing critical responses that allowed them to explore ideas and study topics more deeply.

First Context: The Independent Curriculum (IKM) manifesto to ensure "Educators' Flexibility and Quality Learning" should be understood by enhancing and strengthening educators' capabilities, professionalism, and creativity. It should not simply involve transitioning teaching and learning styles without thoroughly assessing students' literacy and numeracy data and abilities, particularly in elementary schools. Educators can only gain the flexibility to design, implement, and evaluate their teaching effectively when they have fully developed their competencies, both juridical (pedagogical, personal, social, and professional) and heutagogical (capable, professional, and creative), and understand the characteristics and needs of learners. This development must stem from the educators' awareness, fostered through the "Development of Soft Skills and Character," "Focus on Essential Materials," and "Flexible Learning" as the three pathways of the IKM manifesto. This approach was also reflected in a focused discussion with three Guru Penggerak (GP) from leading Sekolah Penggerak (SP) in South Sulawesi during the 2023/2024 academic year, representing a case study from SP Cohort I. The direction and outcome of the discussion highlighted awareness as the starting point for educators' self-development through the PMM self-training menu, which they then implemented in real-world practices. Teachers increasingly became aware of their teaching quality and expressed a growing need for more intensive and persuasive guidance to optimize their achievements. However, their progress remains more focused on quantitative percentages and accessibility measurements.

Second Context: The implementation of the Platform Merdeka Mengajar (PMM) as a tool to evaluate the quantity and quality of Guru Penggerak (GP) and Sekolah Penggerak (SP), which serve as key indicators of the IKM manifesto has brought forth innovations that empower teachers while offering new experiences in the teaching and learning process. Building on the awareness outlined in the first context, this also serves as a strong benchmark to gauge educators' seriousness in enhancing their pedagogical skills (e.g., using the heutagogical approach) amidst the challenges of digital learning through the PMM self-training menu. The next significant step is to establish shared understanding and consensus on integrating recommended approaches in the form of IKM teaching and learning models and methods tailored to the characteristics and needs of learners. It shared awareness and understanding, which translate into commitment, are deemed essential by the Principal of UPT SDN 166 Pinrang, the Principal of UPT SDN 86 Pinrang (a former 4th-grade teacher at UPT SDN 166 Pinrang during the 2022/2023 academic year's second semester), and a Practitioner Teacher from the Guru Penggerak Program who also serves as a School Supervisor for the Pinrang Regency Education and Culture Office (previously an active member of study groups during the 2013 Curriculum era at UPT SDN 166 Pinrang and recently conducted research there). These individuals see commitment as fundamental to realizing an interactive and integrative teaching and learning process. Mastery of digital platforms must become a transition in teaching and learning rather than merely using applications as tools. This mastery is crucial to addressing the challenges of digital learning transformation. A comprehensive and holistic penetration of PMM, coupled with strengthening internet hardware and software connectivity, is the starting point for this acceleration.

In other words, educators' mastery of new approaches and integration of digital technology into teaching and learning processes form the foundation for applying IKM's intra-curricular, co-curricular, and extracurricular activities in an integrated and interconnected manner, particularly in strengthening learners' literacy and numeracy. However, there are still instances of improper implementation of teaching and learning approaches, where new methods are applied directly without a thorough understanding or mastery, coupled with a lack of insight into the characteristics and needs of learners. New approaches and the application of digital technology in teaching and learning make learners more engaged with models, methods, or media, allowing greater exploration. However, this should not come at the expense of fundamental material mastery (literacy, numeracy, science), nor should educators abdicate their responsibilities by acting merely as facilitators (Astuti & Kasprabowo, 2023). Thus, contextual learning (allowing educators flexibility according to the growth environment and developmental stages of each learner) and essential learning (ensuring the continuity of fundamental materials with learners' imagination and intelligence) must become educators' shared awareness and understanding on a broad and equitable scale. This shift should no longer be assessed merely through quantitative achievements or percentages but rather through the manifested awareness and understanding of educators who continuously improve their teaching and learning mastery, focusing on learners contextually and essentially.

The Issue of E-Learning Transition and Digital Learning Transformation in Indonesia

The 2021 UNICEF Indonesia analysis and the 2022 APJII survey on the status and penetration of edu-tech and LMS applications in teaching and learning processes (especially during remote learning, or BDR) revealed the urgent need to optimize the e-learning transition to accelerate digital learning transformation in Indonesia. This challenge goes beyond merely evaluating the implementation of BDR within the e-learning framework during the Covid-19 pandemic, with its accompanying inequalities in devices and networks. Another challenge lies in addressing the gaps in digital knowledge and skills between educators and learners and between parents and schools. In other words, improving connectivity and enhancing educators' competencies in mastering LMS-based digital platforms to contextualize and essentialize interactive and integrative teaching and learning processes for learners is the primary challenge of this transition. What must be understood is that the framework for digital learning is not merely about using edu-tech as a teaching tool but about personalizing (e.g., through Web 3.0 and generative AI) the teaching and learning experience for learners anytime and anywhere. It should be done more intensively and comprehensively using LMS-based systems (e.g., big data for total evaluation), thereby deepening the context and essence of the material during classroom sessions.

The findings from the 2023 Internet Penetration & Behavior Survey (APJII, 2023) on the accessibility/connectivity of Indonesian internet users must be examined through two terms: penetration (quantitative percentage reflecting passive use or merely accessing applications) and contribution (qualitative percentage reflecting active use, where applications are utilized for broader needs beyond access). Internet connectivity in Indonesia increased by 1.17% from 2022 to 2023, reaching 78.19% of the total population. However, regional disparities remain evident. Western Indonesia records the highest levels, with a penetration rate of 84.42% and a contribution rate of 83.76%, compared to Central Indonesia at 55.52% (penetration) and 13.55% (contribution), and Eastern Indonesia at 66.91% (penetration) and 2.72% (contribution). When analyzed by islands/regions, the rankings for penetration and contribution are as follows: (1) Java: 81.83% penetration and 58.51% contribution; (2) Sumatra: 73.50% penetration and 20.36% contribution; (3) Sulawesi: 73.59% penetration and 6.92% contribution; (4) Kalimantan: 78.71% penetration and 6.20% contribution; (5) Nusa Tenggara: 72.32% penetration and 3.65% contribution; (6) Bali: 80.88% penetration and 1.65% contribution; (7) Papua: 63.15% penetration and 1.63% contribution; (8) Maluku: 73.45% penetration and 1.09% contribution. The connectivity map identifies four main reasons for internet use: accessing social media, information/news, applications for work and schooling from home, and other public services. Meanwhile, internet connection behaviour shows that 77.31% use mobile data, 20.76% use home Wi-Fi, and the rest rely on public Wi-Fi. Notably, 70.33% of users reported a need for free public Wi-Fi availability. In terms of devices, 99.51% of internet users

access the internet through mobile phones/tablets, while 7.37% use computers/laptops generally. Computer/laptop usage rises to 32.86% among bachelor's degree holders (S1/D3/D2/D1) and 52.64% among postgraduate degree holders (S2/S3). Satisfaction with fixed broadband services is highest at 43.60%, with a score of 8 (on a scale of 1–10, where 1 is very dissatisfied and 10 is very satisfied) for speed and network stability, which scored 62.22%.

The percentage data on internet penetration and contribution among Indonesian users, viewed nationally, still reflect similar disparities to the previous year, following the forced adoption of digital practices during the COVID-19 pandemic. While there has been an increase in the quantity of penetration, the quality of contribution remains uneven. Notably, according to APJII 2023 data, the top three most frequently visited content categories (based on multiple answers) are health (36.96%), sports (34.34%), and entertainment (32.32%). In contrast, content related to education and science and technology (IPTEKS) only reached 18.44%. It indicates that two years after the pandemic, the contribution of internet use to teaching and learning still needs to be fully optimized. Although this data is not specifically focused on teaching and learning (unlike the APJII 2022 report, which provided special coverage of the education sector in Java), it can be observed that penetration rates among users with higher education backgrounds remain relatively low. In other words, infrastructure issues (both hardware and software) still hamper the need to be improved, accelerating digital learning transformation. These deficiencies lead to persistent inequalities in internet connectivity, mastery of teaching and learning platforms, and the digital skills gap between educators and learners, especially between urban and rural areas.

These technical issues form the core of the problem underlying disparities in teaching and learning practices, whether in the framework of e-learning or, more so, digital learning. Even outside the digital perspective, findings still reveal educators' low capabilities, professionalism, and creativity in designing, operating, and evaluating teaching and learning practices in the traditional/conventional framework. This issue remains a significant challenge, particularly in rural areas. This concern is further reinforced by reports from UNESCO-IS, UNICEF, the World Bank, and OECD, such as What is Next? Lessons from Education Recovery (2021) and From Learning Recovery to Education Transformation (2022). These reports emphasize the urgent need to mitigate learning loss caused by school closures during the COVID-19 pandemic and to develop effective and purposeful distance learning strategies. Such strategies should enable the safe reopening of schools for all while reaching all learners as a core component of educational recovery. Additionally, the reports recommend evaluating the ecosystem of digital assessment to match the characteristics and abilities of learners, prioritizing fundamental knowledge and skills to accelerate educational recovery, increasing efficiency and intensifying educator support in the teaching and learning process, and fostering well-being and mental health as a means to enhance access to educational services.

Moreover, based on the PISA 2018 Results: Are Students Ready to Thrive in an Interconnected World? (OECD, 2020), both before and during the pandemic, global education's focus has been on the ability to respond to global changes accompanied by intercultural and multicultural awareness. These elements have become interconnected through the massive transformation of technology and information (such as mastering platforms or edu-tech) in teaching and learning processes. It necessitates openness and equity in opportunities and integrated educational services (through attention and collaboration among schools, teachers, and parents) to strengthen learners' dimensions of knowledge, skills, and attitudes in addressing future challenges.

Additionally, the PISA 2022 Results: Learning during and from Disruption (OECD, 2023) after the COVID-19 pandemic emphasizes the importance of education system resilience and the availability of complete school infrastructure to ensure the continuity of teaching and learning in any disruptive situation. It includes ensuring the involvement and support of educators and parents, along with a safe and comfortable school ecosystem, to foster learner interaction and motivation, thereby intensifying the continuity of hybrid learning processes anytime and anywhere. However, as highlighted in PISA 2022 Results: Insights and Interpretations by Schleicher (2023, pp. 31–34), regarding the use of devices and digital platforms as a vision for the future of education, not all

countries have learners who fully master digital technology to meet their learning needs. Even in OECD member countries, 65% of learners are distracted by digital devices/platforms (particularly in mathematics), which rises to 80% in non-OECD countries. This distraction significantly impacts learning outcomes, including disruptions caused by other learners using digital devices during teaching and learning processes. In Indonesia specifically, a substantial number of learners continue to struggle with independent learning and completing assignments. As a result, they still require considerable support from educators, both remotely via digital platforms and through face-to-face classroom interactions.

This phenomenon should undoubtedly become a subject of further study to strengthen the Platform Merdeka Mengajar (PMM), particularly in elementary schools. Using the 2023 initial data on PMM achievement in 52 elementary schools with Sekolah Penggerak (SP) status in South Sulawesi Province as a case study, it is evident that the penetration and contribution of Guru Penggerak (GP) still require intensified and extended efforts. These efforts are necessary to ensure the application of self-training menus goes beyond merely accessing them as tools or teaching assessments. On a national scale, certain cases already illustrate the direction of acceleration toward digital learning transformation. However, the significant gaps in connectivity infrastructure and digital devices in rural areas must be addressed. These fundamental issues must serve as the foundation for ensuring flexible policies and legal certainty within various MBKM policies. At the very least, these policies have opened doors for those who know the need to improve education quality. Theoretical and practical strengthening of teaching and learning processes, as outlined in the IKM manifesto, must be based on competency- and experience-driven training tailored to the needs and environments of schools on a massive scale. Additionally, teacher education must be designed comprehensively based on case studies aligned with MBKM policies at the campus level (Usman & Yusrina, 2023). In other words, mastering the application of digital tools/platforms in teaching and learning processes from a heutagogical, interactive, and integrative perspective is a pillar of digital learning transformation. This approach is essential for ensuring equitable educational quality across all regions.

The Equality and Prosperity of Educators and Learners as the Future of Indonesian Education in a Continuous-Concentric-Convergent Way

To improve the quality of education in Indonesia, ensuring equity and well-being for educators and learners in accessing educational services must become a shared priority, starting from the basic education (Dikdas) level. This equity and well-being involve creating an inclusive educational ecosystem through collaborative efforts. In this context, INOVASI highlights four series of Learning Gap Studies (Studi Kesenjangan Pembelajaran, SKP) on the phenomenon of learning loss and the path toward education recovery during and after the Covid-19 pandemic in four partner regencies: East Java, North Kalimantan, West Nusa Tenggara, and East Nusa Tenggara, as well as four non-partner regencies: Jambi, Southeast Sulawesi, South Kalimantan, and North Maluku. The first SKP series, Not Just Letters and Numbers: The Impact of the COVID-19 Pandemic on Indonesian Students' Basic Literacy and Numeracy Skills (Spink et al., 2022), reveals key findings. It highlights the low levels of basic literacy and numeracy among elementary school students, attributed to overly ambitious curriculum targets and misalignment between the curriculum and national assessments—even exceeding global frameworks. These issues are compounded by disparities between families and schools across various regions, exacerbating educational inequalities and leaving rural areas further behind than urban areas.

Furthermore, the second SKP series, titled Reforming the Indonesian Curriculum: How the Independent Curriculum Addresses Learning Loss and Improves Literacy and Numeracy Outcomes (Randall et al., 2022), illustrates how learning loss, which had existed even before the pandemic can be mitigated through curriculum reform. It involves adopting a flexible curriculum that emphasizes contextual learning processes and essential materials through the Independent Curriculum (IKM) in the form of the Pancasila Student Profile (P5), focusing on learners' literacy and numeracy. However, its actualization in schools needs to be improved. Many educators need a comprehensive understanding of IKM and help to implement various Merdeka Belajar programs or platforms. However, they need more access to internet connectivity and digital devices. As a result, the process often devolves into merely fulfilling administrative obligations.

This issue is compounded in the third SKP series, Widening Gaps: The Impact of the Covid-19 Pandemic on the Most Vulnerable Students in Indonesia (Pascoe et al., 2022). It highlights that disparities in parental support (particularly in education levels and expenditures) and school assistance (notably internet services, devices, and educators' qualifications) between rural and urban areas must be more equitable. Such inequities widen the educational quality gap, as evidenced by declining reading, arithmetic, and reasoning abilities among learners—even in OECD member countries, as revealed by the PISA 2022 results.

The global education crisis has become a shared challenge that OECD and UNESCO have mapped into The Future of Education and Skills 2030 and The Future Framework on Culture and Arts Education. These initiatives outline the direction for achieving equitable and prosperous education sustainability in the future. The Education and Skills 2030 project by OECD, which began in 2015 and culminated in a final report in 2018, envisions the means to achieve the aspirations of global educational transformation. Its goal is to develop learners' knowledge, skills, attitudes, and character to respond to the uncertainties of the era. This educational transformation seeks to ensure that education systems and curricula create a learning ecosystem that nurtures every learner to become a fully educated individual aligned with their unique interests and talents.

Similarly, UNESCO's Culture and Arts Education framework—an evolution of the Road Map for Arts Education (2006, Lisbon), the Seoul Agenda: Goals for Arts Education (2010, Seoul), and the Frankfurt Declaration for Arts Education (2019, Frankfurt)—continues to develop throughout 2023. Its formulation will be presented as part of a World Conference, supported by the recommendations of UNESCO's Future of Education and the World Conference on Cultural Policies and Sustainable Development on February 13–15, 2024, in Abu Dhabi. This framework aims to enhance the quality of education through a cultural perspective using a multicultural arts-based approach. It addresses socio-cultural challenges, the creative industry, and the current digital transformation, fostering awareness and granting learners the freedom to express and create from what they have learned. The fertilization of arts and culture in transforming educational quality is emphasized to achieve Sustainable Development Goal (SDG) 4: ensuring inclusive and equitable education and promoting lifelong learning opportunities.

Reimagining Our Future Together: A New Social Contract for Education (UNESCO, 2021) encapsulates the hope for a future of lifelong quality education for all. This document aims to rebuild the foundations and pillars of a fair and prosperous teaching and learning ecosystem (both environment and curriculum) as the basis for global progress moving forward. Its shared agreements are as follows: (1) Learning patterns (e.g., heutagogy) should be sharpened cooperatively and collaboratively to create meaningful teaching and learning processes; (2) Curriculum essence should be contextualized into lessons that are ecological, intercultural, and interdisciplinary (both locally and globally) to foster learners' critical attitudes and capacities; (3) Teaching strategies should become increasingly professional, with educators serving as mentors, knowledge processors, and role models in driving educational and socio-cultural transformation; (4) School environments should be safe and comfortable, forming inclusive ecosystems that embrace personal and cultural diversity while innovating in response to the latest advances in science, technology, and the arts (IPTEKS). These environments should reflect a world of equity and prosperity; (5) Interconnectivity (e.g., LMS-based digital learning) in delivering quality and progressive education services should be accessible and expandable to all layers of society worldwide, anytime and anywhere. In other words, educators play a vital role and must be provided with intensive and extensive opportunities to enhance their heutagogical capabilities, professionalism, and creativity. It is essential for creating teaching and learning processes that are truly oriented toward the characteristics and needs of learners.

The vital role of educators should become a priority in Indonesia's basic education (Dikdas), starting with reforms in the structure (curriculum and lecturers) of Primary School Teacher Education (PGSD) to produce elementary school teachers with strong moral character (berAKHLAK). Additionally, recruitment processes (tests and patterns) at the Ministry of Education, Culture, Research, and Technology (Kemendikbudristek) and local governments should be catalyzed to realize high-quality elementary school teachers for an inclusive and

transformative future for Indonesian education. According to Reopen, Recover, and Resilience in Education: Guidelines for ASEAN Countries (ASEAN, 2022), educational transformation within the digital learning framework must prioritize full support for educators. It includes fulfilling hardware and software needs for teaching and learning and ensuring salary welfare. Efforts to recover from learning loss will not yield significant impacts if they focus solely on new teaching and learning strategies or curriculum updates without continuously enhancing educators' capabilities, professionalism, and creativity. Inter-ministerial and institutional policies related to best practices in teaching and learning must consider workloads that align with adequate support for educators, ensuring excessive administrative tasks no longer burden them. Furthermore, the government must strive to provide learning opportunities for every student to return to school, resume their education, and receive the necessary facilities to continue their studies. This effort aims to eliminate school dropouts, a prevalent issue in many developing countries.

In line with the RISE study Giving Schools and Teachers Autonomy in Teacher Professional Development under a Medium-Capability Education System (Rarasati & Pramana, 2023), a case study in DKI Jakarta found that Indonesia's long-standing top-down system impacts school principals' support for teachers in fulfilling their professional responsibilities as educators. This is the case even though teachers now have autonomous rights and obligations to develop their professional competencies. Similarly, findings from Screening Teachers in Indonesia: Does Ex-Ante Teacher Characteristics Assessment Predict Teaching Effectiveness? (Bima et al., 2023), a case study of contract elementary school teachers in Bukittinggi revealed that teacher competency levels—pedagogical, personal, social, and professional—play a significant role in student numeracy and literacy outcomes. These competencies include designing teaching strategy portfolios, mastering the content and context of lessons, understanding teaching models/methods, evaluating processes and assessing learning outcomes, and having teaching experience. As such, these competencies must become core instruments in recruiting quality teachers.

Both findings underscore the urgent need to standardize competencies and enhance educators' awareness to focus on creating teaching and learning processes that are contextual and essential to the learners' character and needs. It ensures educators no longer abdicate responsibility under the pretext of learner-centered approaches. This issue is further reflected in the fourth SKP series, Stronger Together: Post-Pandemic Learning Recovery (Sukoco et al., 2023). The series highlights positive responses to IKM while emphasizing gaps in teachers' understanding of curriculum paradigm shifts, component socialization, and step-by-step implementation. These shortcomings ultimately stem from educators' competencies. Equity in access to improve educational competencies and well-being in fostering educators' scholarly competencies is critical. It must be ensured through intensive and extensive policies, starting from PGSD programs and elementary schools, in a continuous, concentric, and convergent manner. This approach aligns with the educational philosophy of Ki Hadjar Dewantara, who laid the foundation for Indonesia's education credo through the Asas-Asas of 1922 and the Dasar-Dasar of 1947, leading toward independence.

The future of inclusive and transformative (basic) education in Indonesia relies on policy certainty regarding the enhancement and strengthening of competencies for prospective, pre-service, and active educators (PGSD lecturers and elementary school teachers) to create a teaching and learning process fully centred on learners (prospective elementary school teachers and elementary school students). The acceleration of digital learning should also become a cross-ministerial/institutional focus to ensure interconnectivity for quality and progressive education accessible to all regions by evaluating the penetration and contribution of interactive and integrative digital learning platforms. Without these efforts, the IKM policy through the episodes of Merdeka Belajar (MB)—offering transformation in the education system and flexibility for institutions and educators in creating operational curriculum derivatives—will only result in repeated curriculum changes. It is inevitable if it does not focus on the fundamental principles of creating sustainable teaching and learning processes (Wijarwadi & Alam, 2023; Napitupulu, 2023). Therefore, it becomes increasingly important to dissect the Vision of Golden Indonesia 2045: Is the intended transformation of Indonesia, aiming to achieve a Sovereign, Advanced, and Sustainable Nusantara, truly rooted in equitable access to

lifelong quality education for every Indonesian? What guarantees are in place for educators' welfare to ensure this, in line with the pace of technological advancements in the digital era? Perhaps it is time to reflect again on Ki Hadjar Dewantara's assertion regarding education (awareness) from a cultural perspective through an artistic approach, as expressed in his article The Relationship and Balance between Regional and National Culture in Harian Kedaulatan Rakyat on May 20, 1953. His reflection encourages us to examine what we have achieved through independence, stating:

> Apabila kita meninjau segala pokok dan pangkal cita-cita sejak "Hari Kebangunan Nasional" sampai "Hari Proklamasi Kemerdekaan", maka nyatalah adanya hasrat menyatukan bangsa Indonesia sebagai syarat mutlak untuk mencapai kemerdekaan bangsa, lepas dari penjajahan asing…Agar lebih luas dan lebih dalam pandangan kita, maka baiklah kepentingan-kepentingan itu kita perluas dan perdalam menjadi kepentingan-kepentingan kebudayaan dalam sifatnya yang utuh…sebagai berikut:
> a) kebudayaan nasional kita ialah segala puncak-puncak dan sari-sari kebudayaan daerah di seluruh kepulauan Indonesia, baik yang lama maupun yang baru yang berjiwa nasional;
> b) perkembangan kebudayaan nasional kita harus melalui jalan (yang saya sebut "tri-kon"): kontinyu dengan apa yang telah silam, konvergen dengan jalannya kebudayaan-kebudayaan lainnya dan akhirnya konsentris dalam persatuan yang besar (yaitu bersatu namun tetap mempunyai sifat kepribadian)…
>
> Apa artinya kemerdekaan, kalau rakyatnya terus mengekor kebudayaan-kebudayaan bangsa-bangsa lain…Kebudayaan untuk tiap-tiap bangsa adalah sama dengan apa yang disebut "*persoonlijkheid*", yakni kepribadian…begitulah bangsa yang tak berkebudayaan, tidak berhak untuk diperlakukan sebagai negara yang merdeka dan berdaulat…Ingatlah bahwa "nasi goreng" tetap merupakan makanan nasional, sekalipun di dalamnya terdapat bahan-bahan asing, yakni mentega dan keju; karena kita yang memasak, maka kitalah yang tetap memiliki "*auteurschap*" atas nasi goreng yang modern itu; nasi goreng yang ber-mentega dan ber-keju itu adalah tetap nasi goreng nasional (Dewantara, 2013, hh. 88-92).

Conclusion

The teaching and learning process that centres on learners must become a shared understanding, recognizing that its optimization and acceleration lie in the capabilities, professionalism, and creativity of educators (lecturers and teachers) in holistically actualizing their pedagogical, personal, social, and professional competencies. Such understanding can only materialize, as emphasized in this diagnostic study, if prospective elementary school teachers experience contextual and essential teaching and learning processes during their university education. These processes should be facilitated by PGSD lecturers, who comprehensively explore Indonesian education philosophy and dissect the curriculum to design derivatives aligned with learners' developmental stages, characteristics, interests, and talents. Through this understanding, we hope for the emergence of a collective awareness to continually enhance and strengthen teaching and learning strategies in line with advancements in digital technology. The transformation of digital learning is not merely about digitizing education; rather, it is a framework for ensuring equitable access to and delivery of quality, progressive education for every Indonesian, anywhere and anytime. Only with inclusive and transformative equitable quality education can we envision shared prosperity in welcoming the Vision of Golden Indonesia 2045. This hope, as reflected in this diagnostic study and our professional discussions within the scope of elementary education and the digital learning framework, represents our efforts to initiate interconnectivity between discussions at campuses and schools. Thus, the future of our education through Merdeka Belajar relies on policy certainty and a resilient and sustainable education system. This system must enhance and strengthen educators' competencies to enable a fully learner-centred teaching and learning process. It is the transformation Indonesian education should pursue, rooted in our demographic conditions and socio-cultural context.

Acknowledgement

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