

# TECHNOLOGY-DRIVEN EDUCATION REFORM IN INDONESIA

A look into the current status  
of the Merdeka Belajar program

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# EXECUTIVE SUMMARY

The acceleration of a nation's development and the revitalization of talent often begins with educational rejuvenation. Many countries understand this principle, and over the past few decades, numerous inspiring educational reforms have been initiated worldwide. In Indonesia, the quality of basic education has raised concerns in recent years. On one hand, educational reforms seem to have entered a bottleneck period, requiring a re-evaluation of the current situation and root causes for targeted interventions. On the other, injecting vitality into such a vast education system swiftly demands innovative new approaches.

This report focuses on the intermediate outcomes of Indonesia's recent educational reform program, "Merdeka Belajar" and the Indonesian government's efficient and creative incorporation of technology in the execution of education policies. It examines the root causes that have plagued Indonesia's basic education system, showcases the intentions and scope of the educational rejuvenation program, and reveals how technological tools and interventions played a pivotal role in the implementation of policies.

Our research has identified that the root causes to such poor performance are the content prescription base curriculum, lack of career development for teachers, low efficiency in school management and decision making. The educational reform program hence encompasses crucial elements to tackle these challenges at their roots.

The new curriculum, Kurikulum Merdeka, aims at making learning simpler and more profound, and enhancing students' critical thinking and problem-solving skills. Effective communication, training, and encouragement for teachers to engage in the re-creation of the curriculum are paramount. Throughout the process, technology tools played a crucial role, while leaving a profound and lasting impact, as a direct communication channel has been established between the Ministry of Education, Culture, Research, and Technology (MoECRT) and individual teachers.

Additionally, to truly realize the educational vision depicted by the new curriculum, teachers play a crucial role. Over the years, Indonesia's teacher community has faced challenges that urgently need addressing. The process of selecting and appointing principals is lacking. The allocation of teacher training resources has been extremely imbalanced in the past. Besides, in the context of the past prescriptive curriculum, teachers lacked the opportunities and motivations to be innovative about teaching activities. These competency gaps need swift replenishment, and a comprehensive solution is required to fundamentally change teachers' mindset, beliefs, and motivational behaviors.

Educational tools, facilitated by the widespread use of smartphones, can achieve revolutionary behavioral changes. The Indonesian government has recognized this and has developed corresponding technological solutions, continuously adding usage scenarios to make them a normalized tool in teachers' professional lives.

Finally, the management and decision-making capabilities of schools need to be strengthened, especially the ability to reflect on problems and allocate resources, and the streamlining of school administrative processes, for example, the management of procurement and budgeting. Technology has provided solutions to all of these problems and has interacted with other technology platforms in the ecosystem, becoming a fundamental tool for modern school management.

## Technology-enabled reform

Indonesia's large and complex education system makes reforming it a challenging task. Taking into account its national context, Indonesia has chosen the natural option of using technological means to promote the implementation of policies. As a smartphone-centric society, a cell-phone-based approach was chosen to ensure broad accessibility. This is further complemented by a laptop distribution initiative to strengthen weak links in schools' information and communications technology (ICT) infrastructure.

Several technology platforms were introduced to facilitate Merdeka Belajar. This report will primarily focus on four platforms produced by the MoECRT that include Platform Merdeka Mengajar (PMM), Rapor Pendidikan, ARKAS, and SIPLah.

Platform Merdeka Mengajar is a one-stop enablement and upskilling solution for teachers. Rapor Pendidikan showcases the schools' assessment results in the form of key learning indicators along with root cause analysis, school planning and improvement recommendations. ARKAS offers streamlined budgeting, planning, and reporting processes of the government's funds. It is best used together with SIPLah, a procurement platform that connects schools with nine different ecommerce partners to allow for a better reach and wider selection of products.

What also stands out in Indonesia's practice is the establishment of an iterative workflow (discovery, delivery, and distribution) for the development and operation of education technology products. Adhering to a user-centric philosophy, technology solutions place the needs of end-users at the core of every workflow. These tools not only help facilitate the implementation of policies but also attentively fills the gaps between policy frameworks and the actual needs of the target audience. This has led to improvements in efficiency, flexibility, and a sense of user-friendliness. Relying on the merits of their own, rather than administrative orders, these products have gained reputation and recognition.

Just like the education reform, this too represents an exciting transformation. Technological tools only break temporary barriers. Advocating for collaboration, continuous evolvement, and placing the end-users at the core indicate the internal transformation from inside the ministry, shifting its way of working toward a more open and adaptive manner.

## Key technological tools

It is still too soon to observe tangible academic improvements at this stage. Change management always starts with behavior, mindset, philosophy, and culture. The product usage data and user feedback clearly demonstrated promising intermediate results among teachers and principals. Their perceptions of curriculum, teaching objectives, and student cognition are evolving, and a stronger motivation for self-reflection and learning is emerging.

Out of six deployment tools used, “Platform Merdeka Mengajar” (PMM) managed to stand out as the primary implementation lever. Many principals and teachers reported that the platform has helped them realize that the improvement of learning quality should be focused on their students, and that each student has unique characteristics. These changes indicate a key mindset shift that shall pivot the next wave of pedagogical strategy upgrades.

PMM’s training and community features have also been well received by teachers and principals, with over 80% and 70% of them respectively engaging in activities. Teachers have reported improvements in the classroom learning experience, heightened student engagement, and increased enthusiasm. Beyond, our survey also revealed that teachers and principals feel inspired and increased professional pride, showcasing PMM’s positive impact on morale and mindset changes in the Indonesian education sector.

Looking ahead, PMM aims to broaden its role, not only enhancing teacher capabilities but also addressing broader professional development needs. This includes acting as a channel to identify potential school principals, with future plans to become a comprehensive solution supporting teachers in areas such as career advancement and promoting data-driven teaching practices.

“Rapor Pendidikan” has supported schools in their transformation towards data-driven decision-making. As of October 2023, about 95% of all of Indonesia’s G-12 schools have adopted Rapor Pendidikan. More than 80% of survey respondents agreed that the platform plays a crucial role in identifying priority areas of improvement when planning for the next academic year.

“ARKAS” and “SIPLah” streamlines budgeting and accountability processes by providing an easy and transparent workflow, which improved the overall sense of security in compliant financial reporting, and saved time for teachers. Streamlining school management affairs also has additional benefits as a number of teachers in Indonesia take on school management duties as their second roles. Improving the efficiency of administrative affairs and reducing human errors and workload mean that these teachers’ time and energy can be freed up.

We have also tracked movements of the laptop distribution program, supplementary to the software and tool provision initiatives. To date, a substantial number of 1.2 million laptops have been distributed throughout the country. Based on the reported computer usage data collected by MoECRT, more than 80% of distributed computers are utilized for teaching and learning activities. These devices have revolutionized the classroom experience, empowering educators to deliver engaging lessons while providing students with access to a wide range of educational resources.

## **Future state**

Globally, there is an irreversible trend towards making education smarter, more accessible, and focused on individual development, utilizing a myriad of ever-evolving technological means. For emerging nations, it is an opportune window to catch up.

Indonesia's endeavors today align with this overarching trend by choosing a distinctive path. Instead of taking on a full education digitization which is costly and takes long time to roll out, Indonesia is focusing on developing tools to unlock human potential and deploying them swiftly to where urgent interventions are most needed.

The MoECRT envisions a future where the positive impact of these interventions becomes an organic and enduring part of the country's educational landscape. Many of the abovementioned technological intervention tools have been planned for a broader spectrum of functionalities and visions — as an integral part of teachers' career development and a lifelong learning companion, and as the communication channel among various educational stakeholders to facilitate collaborative discussions among teachers, administrators, and parents in near future.

Our analysis of the recent Merdeka Belajar movements in Indonesia's educational landscape reveals a promising trajectory characterized by commendable progress and strategic initiatives, indicating that Indonesia is heading towards systemic transformation for the better.

The transformative journey is a nuanced process of shifting the culture and mindset, not only within the central government, but also among the vanguard of Indonesia's education system, including teachers, school principals, and local government entities. As the country embarks on this inspirational journey, the importance of sustained efforts and consistency cannot be overstated in achieving educational transformation. It is crucial to acknowledge that moving in the right direction entails more than immediate change; it requires patience and perseverance.

## Chapter 1

# BACKGROUND

In this chapter we explore the educational landscape in Indonesia and the transformative initiatives undertaken by the Ministry of Education, Culture, Research, and Technology (MoECRT), to improve the competitiveness of Indonesian students and prepare them to become lifelong learners.

The education system is entrenched with long-standing issues and to achieve transformation is no overnight task. The country must navigate through outdated curriculum structures, enhance teacher capabilities, and revolutionize school management. In recent years, the Indonesian government has initiated a new education revitalization movement: “Merdeka Belajar” (Emancipated Learning).

Today, Indonesia’s K-12 education system comprises 437,311 schools (including early childhood education), 53.8 million students, and 3.3 million teachers. The essence of the rejuvenation program is to inspire and empower every unit in this ecosystem. Such transformation is both exciting and incredibly challenging.<sup>1</sup>

Globally, technology has become a catalyst for disruptive change, and the same holds true in the field of education. In the education reform led by the Indonesian MoECRT, technology plays a pivotal role, acting as a catalyst in the face of complex and urgent situations, becoming one of the driving forces behind Merdeka Belajar.

## **There’s an urgency for Indonesia to transform education to support the country’s advancement**

Indonesia is renowned for its expansive archipelago and rich cultural diversity. According to the World Bank, the country is home to one of the world’s largest populations, with approximately 275.8 million people as of 2022. Of this vast populace, a notable demographic comprising around 16%, totaling about 44.5 million individuals, is actively engaged in educational pursuits within Indonesia’s mandatory 12-year education program. The educational landscape that caters to these millions of young learners forms a cornerstone of the nation’s aspirations such as Indonesia Emas 2045, in which it aims to transform Indonesia into a developed and prosperous nation by the year 2045. It marks the centennial anniversary of Indonesia’s independence for developmental and societal progress.

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<sup>1</sup> Oliver Wyman analysis based on data from the PUSDATIN, Center for Data and Information, MoECRT

Indonesia, recognized as the largest economy in Southeast Asia by the International Monetary Fund's World Economic Outlook 2023, is propelled by its vast population and remarkable economic potential, fueling its ambitious vision for the future. The connection between educational readiness and national growth underscores the significance of establishing a strong foundation in talent development. The pace of a nation's development often positively correlates with the quality of its education system. This association is particularly prominent for kindergarten to Grade 12 (K-12) education, the rudimentary starting point and primary platform for shaping the future generations. However, Indonesia had been grappling with a persistently low academic performance on average, presenting formidable obstacles to its developmental journey.

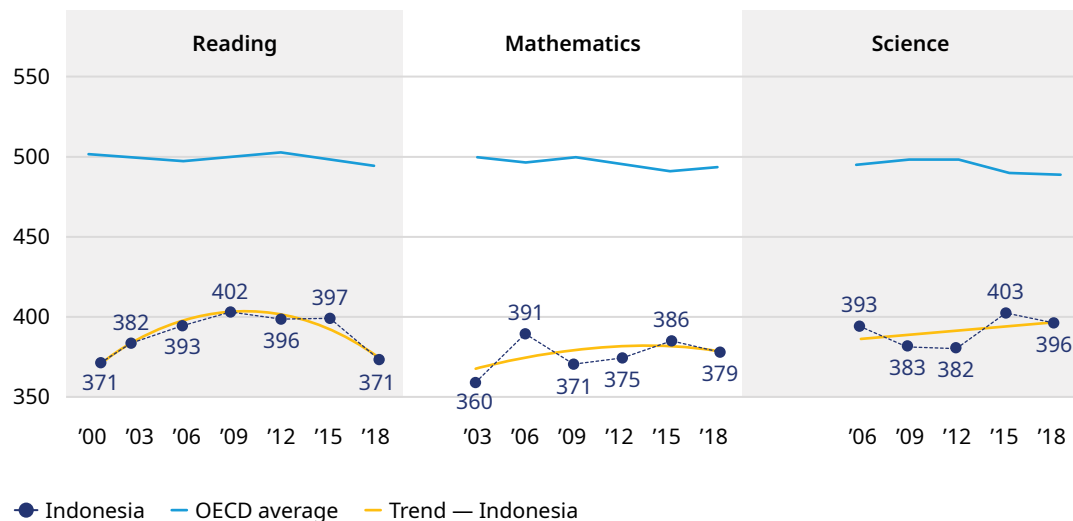
## **Low academic performance and regional disparity**

Further exploration of Indonesia's educational complexities reveals that the unsatisfactory performance in international assessments and evaluations represent only the tip of the iceberg. While these assessments depict insights at the city level, they mask the underlying issues of disparity and inconsistency prevalent across the educational spectrum. This inherent disparity becomes amplified in Indonesia, a vast and diverse country marked by regional variations and a substantial population, making holistic academic improvement a daunting task. The expansive geographical size of Indonesia, coupled with regional disparities, has significantly amplified the intricacies involved in systematically enhancing academic performance and implementing comprehensive improvements across the nation's education system.

Indonesia faces a sobering challenge in terms of academic performance, as underscored by a series of findings. International assessment studies, such as the Programme for International Student Assessment (PISA), have indicated a concerning fact where the quality of education in the country has struggled to keep pace with its developmental aspirations. These assessments have revealed a stark reality: in contrast to the average scores of the Organization for Economic Co-operation and Development (OECD) countries, Indonesian students lag their global peers by approximately three years. Perhaps even more alarming is the fact that over half of Indonesian 15-year-olds struggle to master fundamental skills in literacy and numeracy. The urgency of improving Indonesia's educational landscape is further underscored by the inadequate participation rates in senior secondary education, where fewer than one-third of Indonesians<sup>2</sup> successfully completed this critical phase. This can be attributed to shortcomings in the earlier educational stages, as deficiencies in those levels contribute to a decline in the senior enrolment and attendance of students.

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2 OECD. (2023). Education GPS. [www.gpseducation.oecd.org/CountryProfile?primaryCountry=IDN&treshold=10&topic=EQ](https://www.gpseducation.oecd.org/CountryProfile?primaryCountry=IDN&treshold=10&topic=EQ)

**Exhibit 1.1: Indonesia's 2018 PISA Results**

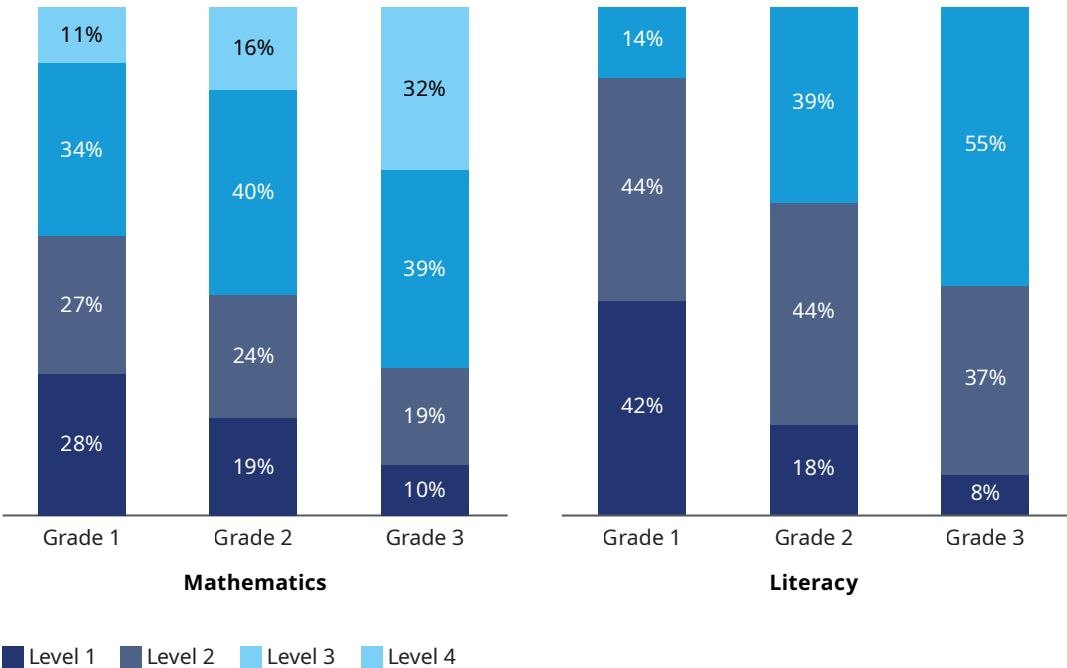
Source: OECD Programme for International Student Assessment, 2018

The performance of mainly 15-year-old Indonesian students in literacy, numeracy, and science falls well below the average scores of the OECD countries. In reading, only 30% of Indonesian students reached a proficiency level of at least Level 2, significantly lower than the OECD average of 77%. For context, Level 2 readers can identify the main idea in moderately long texts, understand relationships within a limited part of the text, and make basic inferences even when there is distracting information. Similarly, in mathematics, just 28% of Indonesian students achieved Level 2 proficiency or higher, compared to the OECD average of 76%. In the field of science, approximately 40% of Indonesian students attained proficiency levels of Level 2 or higher, lagging the OECD average of 78%.

A separate study by Innovation for Indonesia's School Children (INOVASI) in 2022 conducted a comprehensive situational analysis examining students' learning status and the potential impact of COVID-19 in Indonesia. Part of the study included literacy and numeracy assessments for students in Grades 1 to 3. Additionally, the study benchmarked the findings against both global and national reference points, linking the assessments to sustainable development goals through frameworks such as the Global Proficiency Framework (GRF), and aligning the results with national assessments such as the Indonesian Minimum Competency Assessment (AKM) and Indonesia's 2013 curriculum, commonly known as K-13, which was the country's most recent educational framework preceding the COVID-19 outbreak.



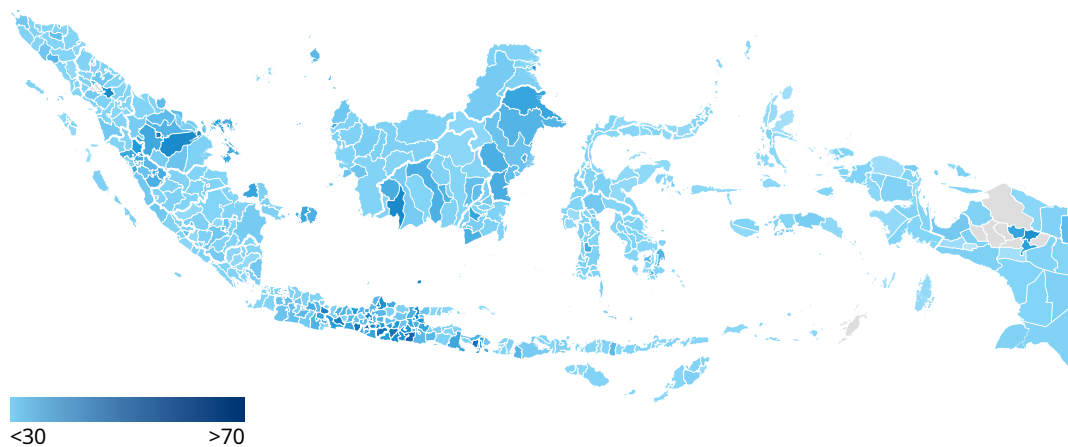
**Exhibit 1.2: Proportion of students by level by grade**



Source: INOVASI. 2022. The Learning Gap Series — One. Beyond letters and numbers: the COVID-19 pandemic and foundational literacy and numeracy in Indonesia

The results of the study show that there are similar concerns among the tested subjects across Indonesia's educational landscape. In the field of mathematics, the vast majority of 84% of Grade 2 students did not achieve minimum proficiencies, while by Grade 3, roughly two-thirds of the students failed to meet expected standards. In Bahasa Indonesia, particularly with regard to listening and reading comprehension, nearly 60% of Grade 2 students fell short of minimum reading proficiencies. These statistics highlight the urgent need for targeted educational interventions, and to reevaluate Indonesia's pedagogical approaches so as to bridge these profound learning gaps.

### Exhibit 1.3: Literacy score competency from Asesmen Nasional 2021 in Elementary/MI/ equivalent level



Source: Oliver Wyman analysis based on data from the PUSDATIN, Center for Data and Information, MoECRT

Indonesia also faces significant challenges due to its regional disparities in educational achievement, arising from the country's diverse geographical and sociological characteristics. The Asesmen Nasional (National Assessment) results for the 2021/2022 academic year have brought to light significant variations in literacy and numeracy scores among students across Indonesia's different regions. In the assessment, students in the Eastern province attained lower scores in literacy, whereas students in the central island of Java performed notably better, achieving three times the scores. This disparity marks the great presence of educational inequality and divergent levels of educational attainment across different regions in Indonesia.

Indonesia stands at a critical juncture, necessitating rapid and effective solutions to seize the window of opportunity for comprehensive development. The overhaul of Indonesia's foundational education is crucial, owing to the variety of deeply entrenched challenges that have persistently fueled the nation's educational complexities. Addressing these multifaceted issues at their root cause is pivotal to successfully drive substantial improvements within the educational landscape nationwide.

## **With the imperative to revitalize the K-12 education system specified, steps must be taken to address the root causes**

### **Root causes of Indonesia's low educational performance**

#### **Nature of previous curriculum**

The underlying causes of Indonesia's low educational performance can be attributed to several critical factors within its educational system. There has been historical inclination towards delivering uniformed national curriculum that focus on content mastery. This approach entailed each student receiving identical content at the same pace without considering important factors such as student's competency level, character development, and contextualization for regional variances.

Teachers often neglect the crucial aspect of assessing student comprehension,<sup>3</sup> prioritizing instead the completion of curriculum to meet compliance requirements. This has resulted in less meaningful learning that is less engaging and enjoyable for students. Students and parents have expressed concerns and dissatisfaction with the perceived excessive workload.<sup>4</sup>

Education challenges can be also attributed to a lack of competency in effectively facilitating student learning, as teachers often deprioritize teaching at the right level in favor of completion. The rigid emphasis on uniformity overlooked the diverse needs of students and posed limitations on addressing varied learning abilities across schools and regions. This attitude became deeply entrenched in the mindsets of educational actors, leading to the delivery of an education system that defines success on the conveyance of curriculum content and acquisition of cognitive skills over the progress of students' basic competencies.

#### **Centralized governance of education curriculum**

The centralized governance of education curriculum, characterized by a uniform and prescriptive approach to standard setting, presented a significant hindrance. The "one-size-fits-all" system had caused a lack of awareness among school principals and on the importance of customizing teaching and learning strategies to the specific circumstances of their schools.

The lack of flexibility posed by the K-13 curriculum hindered teachers' ability to cultivate creativity and innovation, primarily because it imposes rigid requirements for teachers to handle complex administrative tasks related to teaching equipment.<sup>5</sup>

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3 Research and Development Agency, Indonesian Ministry of Education. (2019). Kajian implementasi kurikulum 2013. Jakarta: Kementerian Pendidikan dan Kebudayaan RI

4 Education Standard, Curriculum, and Assessment Agency MoECRT. (2022). Kajian Akademik Kurikulum untuk Pemulihan Pembelajaran. Jakarta: Pusat Kurikulum dan Pembelajaran Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi RI

5 Ibid.

Following the introduction of the regional autonomy system, several protocols of school management education governance were given to either central governments or district governments. The complexity of this challenge is further intensified by the system and authority structures in these regions. Previously, teacher training in Indonesia took a top-down approach, with control largely vested in local governments and constrained quotas. In 2019, out of around 3 million teachers in Indonesia, only around 620,000 or approximately 20%, attended training due to these limited quotas. The collaboration and partnership between the central government and local governments to promote the development of teacher competence was limited.<sup>6</sup>

### **Limited access for teacher upskilling**

Limited access to training is evidently shown by the unequal distribution of training facilities in Indonesia, primarily concentrated in Java, with only six Center for Development and Empowerment of Educators and Education Personnel (Pusat Pengembangan dan Pemberdayaan Pendidik dan Tenaga Kependidikan or P4TK) until 2020 — resulting a substantial imbalance in the access to high-quality training and teaching resources throughout the country. Teachers who wished to improve their expertise in particular subjects encountered a restricted selection of choices.<sup>7</sup> For example, P4TK IPA Bandung stood as the sole center for enhancing competence in science subjects, Batu in East Java exclusively catered to social studies, and Karanganyar in Central Java served as the exclusive hub for enhancing the competence of school heads and supervisors.

The limited geographic coverage of training centers contributes to disparities in teacher development, impeding the potential for a well-distributed and highly skilled teaching workforce nationwide. These constraints curtailed teachers' opportunity to upskill and upgrade their skills and competencies, hence limiting the capacity to create innovative teaching methodologies and tailor strategies that could enhance students' learning experiences.

### **Mindset of educational actors**

The persistent issue of low educational quality can also be partly attributed to the deeply ingrained mindset of the "comfort zone" mentality which hinders teachers' motivation to actively pursue improvements. Directorate General of Teachers and Education Personnel of MoECRT (2020) further suggests that conventional methods of teacher training in Indonesia have historically relied on one-way methods such as lectures and seminars. This unilateral form of training impedes effective transmission of knowledge, sometimes leading to materials that do not answer specific needs of teachers in their respective contexts.

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6 Directorate General of Teachers and Education Personnel of MoECRT. (2020). Naskah Akademik Pembentukan Balai Besar Guru Penggerak (BBGP) dan Balai Guru Penggerak (BGP)

7 Ibid.

Thus, in addition to the adherence to a prescriptive approach within Indonesian school districts, the aforementioned limited access to training had also inadvertently limited the incentive and culture for innovation and professional development. These systems offered little motivation for teachers to improve teaching methods and enhance professional capabilities, as prescriptive approaches restrict educators to follow a predetermined “recipe” for teaching, stunting their potential for pedagogical growth and innovation.

### **Administrative burden**

The task to better support teachers is further compounded by the administrative burdens placed on certain teachers, particularly in the preparation of class materials. Studies conducted by Education Standard, Curriculum and Assessment Agency MoECRT (2022)<sup>8</sup> and Center for Curriculum and Book Affair (2019)<sup>9</sup> both revealed that teachers in Indonesia tend to prioritize administrative document preparation. Similarly, Khurotulaeni’s 2019 qualitative study<sup>10</sup> conducted in a school in Magelang revealed that a majority of teachers lack the motivation to create lesson plans. They perceive direct classroom actions as more significant than meticulously scripting complex pages. Additionally, the study emphasizes the significance of teachers developing lesson plans in an engaging, inspiring, and enjoyable manner to foster challenges and student creativity.

Teachers have faced difficulties in achieving this expectation due to the excessive complexity of certain parts of the lesson plan, which diverts their attention towards administrative aspects of the lesson plan (Rencana Pelaksanaan Pembelajaran or RPP).<sup>11</sup> Additionally, those with multiple roles often find themselves obligated to handle administrative tasks such as budgeting and reporting. Furthermore, in relation to their role as civil servants, they must fulfil various administrative obligations to receive allowances, secure promotions, and more. The lack of flexibility and personalized style in educational management likely led to a magnification of the challenges and levels of underperformance observed within the education sector over time.

## **In recent years, the Indonesian government has taken a targeted approach and formulated a series of policies to address the above issues at their roots**

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8 Education Standard, Curriculum, and Assessment Agency MoECRT. (2022). *Kajian Akademik Kurikulum untuk Pemulihan Pembelajaran*. Jakarta: Pusat Kurikulum dan Pembelajaran Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi RI

9 Center for Curriculum and Book Affair, Indonesian MoE (2019) *Kajian pengembangan dan implementasi kurikulum 2013*. Tidak dipublikasikan.

10 Khurotulaeni. (2019). The implementation of curriculum 2013 revision on lesson plans made by English teachers of SMAN 2 Magelang in school year 2018/2019. *Journal on Applied Linguistics Language and Language Teaching*.

11 Ahmad, S. (2014) Problematika kurikulum 2013 dan kepemimpinan instruksional kepala sekolah. *Jurnal Pencerahan*. Vol. 8. No. 2

## Government intervention and policies

Since 2019, Indonesia's MoECRT has embarked on a transformative journey to address challenges within the nation's educational landscape. Through Merdeka Belajar or Emancipated Learning, the government adopted a focused strategy and developed a set of policies to tackle the aforementioned issues at their core.

The Merdeka Belajar movement comprised a comprehensive set of policies aimed at transforming Indonesia's education system. Merdeka Belajar also addresses crucial interventions within the education system, such as assessment and curriculum, among other significant aspects. These interventions include, but not limited to, changing the National Examination (UN) to National Assessment (AN) that includes Competency Assessment Minimum and Character Survey, as well as simplifying the Lesson Plan (RPP) to include only three core components. Among the policies are Kurikulum Merdeka (which will be explained further below) and the change to a data-based planning culture.

The approach taken by Indonesia to reform its K-12 education aligns with best practices of other countries. The educational reforms in Finland during the 1990s granted greater autonomy and authority to local municipalities. Notably, teachers were entrusted with the autonomy to design their own curricula and assessments, fostering a new educational landscape characterized by trust, local governance, professionalism, and self-governance.

Similarly, Ontario, Canada embarked on comprehensive reforms in 2003 to improve students' literacy and numeracy standards. Its initiatives focused on enhancing teaching quality through teacher-led solutions, and nurturing leadership development among school leaders through mentoring and appraisal programs. The government actively engaged teachers in the implementation process, ensuring that professionals, rather than bureaucrats, were at the forefront of the educational reforms. This collaborative approach garnered acceptance and support from teachers, contributing to the success of the reform efforts. These examples highlight the significance of empowering educators and involving them in decision-making processes to drive positive change in the education sector. By fostering a culture of trust, professionalism, and collaboration, countries can create an environment conducive to educational excellence and improved student outcomes.

Vietnam also implemented its latest competency based C2018 Curriculum in 2020, moving away from outdated teaching methods focused on one way knowledge transmission and memorization. Under the new competency-based curriculum, Vietnam aimed to give teachers more flexibility and autonomy to tailor teaching to students' needs and to implement technology-based education to equip students with hands-on skills essential for the 21st century. Compulsory subjects have been reduced and complemented by optional and integrated subjects, such as ICT, which has seen strong uptake by 70% of students in 22 cities.

Indonesia's Merdeka Belajar has driven systematic changes to the country's education system specifically with the introduction of Kurikulum Merdeka (Emancipated Curriculum). Kurikulum Merdeka is designed to provide personalized learning experiences that cater to students' individual needs and learning pace, ensuring a meaningful and engaging learning process.

## **Kurikulum Merdeka (Emancipated Curriculum) and Asesmen Nasional (National Assessment)**

Kurikulum Merdeka represents a curriculum characterized by a flexible approach to learning that enables depth in engagement rather than breadth in comprehension while also focusing on fostering character development and soft skills that are responsive to global demands (Minister of Education Decree Number 22 of 2020). The previous curriculum focused mainly on content delivery, equipping students with comprehensive modules that were not streamlined based on the respective students' needs and learning capabilities.<sup>12</sup>

Thus, one of the central tenets of Kurikulum Merdeka is to make learning simpler and more profound, with primary focus on essential subject matter and the development of comprehensive competencies and character in each educational phase. Contents are refined to ensure optimal depth and breadth of learning, affording students ample time and resources to delve into critical concepts. This approach aims to emancipate teachers and students to become more self-reliant. Teachers are encouraged to tailor their instruction so that it aligns with their students' progress and stages of development. For students, at all educational levels, project-based learning is highlighted as a key element to encourage critical thinking, and to improve interdisciplinary problem-solving skills.

Another critical aspect of this curriculum reform is the delegation of authority to schools with the principle of flexibility and gotong royong (working together). The educational content of the previous curriculum was more uniformed in nature, and the implementation of education was more prescriptive in approach.

This resulted in a lack of initiative and incentive for innovation. Alongside Kurikulum Merdeka is the Asesmen Nasional that is an assessment initiative designed to evaluate the quality of primary and secondary schools by comprehensively capturing the input, process, and output of students' learning. This new evaluation process encompasses various crucial aspects including students' literacy and numeracy competencies, and character development. Additionally, it examines the quality of the teaching and learning processes within educational units, commonly referred to as Satuan Pendidikan or Satdik, and with respect to the climate of the learning environment. Results of the assessment serve as data needed by schools to evaluate and improve quality of learning.

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12 Education Standard, Curriculum, and Assessment Agency MoECRT. (2022). *Kajian Akademik Kurikulum untuk Pemulihan Pembelajaran*. Jakarta: Pusat Kurikulum dan Pembelajaran Kementerian Pendidikan, Kebudayaan, Riset, dan Teknologi RI

Asesmen Nasional is conducted through digital platforms and incorporates three essential aspects. Firstly, the Minimum Competency Assessment (Asesmen Kompetensi Minimum) focuses on literacy and numeracy, emphasizing the development of reasoning abilities rather than mere content knowledge. Secondly, the character survey (Survei Karakter) delves into the students' characters, values, and behaviors based on the principles of Profil Pelajar Pancasila.<sup>13</sup> Lastly, the learning environment survey (Survei Lingkungan Belajar) is a tool that provides a comprehensive assessment on the quality of learning support in educational settings. It covers a wide range of aspects including students' a) socio-economic backgrounds, b) effectiveness of classroom learning, c) teacher reflection and improvement of strategies, d) instructional leadership, e) the overall security climate, f) diversity, g) inclusivity, h) gender equality, and i) the level of support from parents and students for educational programs.

In this assessment, students are required to complete all three aspects of the survey, whereas teachers and principals are required to complete the learning environment survey. Each education stage has a maximum number of student respondents, with the primary level of 30 students, and middle and high schools of 45 students. This multifaceted assessment aims to provide a more thorough and data-based understanding of the educational landscape in each educational institution, highlighting both strengths and areas of improvements.



**As part of the transformation, technology is invited as the catalyst to deliver a swift implementation of policies and profound behaviors and mindset shift of education actors**

### **Integration of technology in adoption of education reform**

Administering and implementing a new set of curriculum and assessment schemes presents significant hurdles in a country such as Indonesia. One primary challenge involves ensuring consistent execution across the regions with varied availability of resources and infrastructure, and educational requirements. Achieving synchronization with updated educational objectives at such a vast scale in a country as diverse as Indonesia is complex. Additionally, devising assessment techniques that effectively gauge diverse learning outcomes across regions, while ensuring fair and reliable evaluations, poses another obstacle.

Policymakers have leveraged the power of technology to bridge geographical and logistical barriers with the advent of digital tools, e-learning platforms, and online communication channels. This not only enhances the accessibility of policies but also ensures their swift deployment to various educational institutions, public sectors, and stakeholders.

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<sup>13</sup> Evaluates each student's adherence to noble values, such as noble-minded, collaboration, creativity, critical thinking, an understanding of global diversity, and independence



Furthermore, technology empowers policymakers with data-driven insights and feedback mechanisms, enabling them to tailor policies that meet the evolving needs of their target audience. The integration of technology can be a way to both address the formidable challenges and accomplish the objective of revitalizing the country's education sector through the implementation of more streamlined and expedient strategies. Technology integration also aligns with the core principles of Indonesia's "Digital Government" initiative.

According to the OECD,<sup>14</sup> the application of technology significantly enhances the effectiveness and implementation of public education policies across diverse fields. It does so by addressing three principal areas.

Initially, technology aids in the enhanced supervision, monitoring, and implementation of current policy measures. By accessing data that was previously difficult or costly to acquire, such as the case in the Netherlands, where school support relied on self-reported data for disadvantaged students, digitizing student administrative data improved policy precision. Similarly, in Singapore, the implementation of a portal for resale flats by the Government Technology Agency (GovTech), Singapore's special technology force to drive digital transformation within the public sector,<sup>15</sup> substantially reduced transaction times, exemplifying how digitalization strengthens the amalgamation of policy and operations.

Secondly, technology enables the deployment of innovative and more efficient policy instruments. It enables swift execution of information and communications technology (ICT) projects and reduces overall expenses, a demonstrated feat by Singapore's GovTech and its shared technology infrastructure. Additionally, the establishment of longitudinal data systems allows for the tracking of student progress from early education to the workforce, triggering discussions on resource allocation for low-income students by linking academic performance to household income.

Finally, digital channels foster engagement between the government and stakeholders. For instance, after engaging with citizens, GovTech in Singapore designed an application to streamline services and provide information to families with young children.

In recent years, Indonesia's national strategy to digitize government systems has played a role in addressing the aforementioned obstacles in the education sector. Within this strategic framework, technology is a pivotal enabler that holds immense potential to expedite the impact of educational reforms. Specifically, the government has planned an ICT product spending budget of Indonesian Rupiah (IDR) 17 trillion for the education sector until the end of 2023. Through the incorporation of technological advancements and digital platforms, substantial opportunities exist to accelerate the effectiveness and reach of education reform initiatives, fostering a more inclusive and efficient educational landscape.

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14 OECD. (2019). "Using digital technologies to improve the design and enforcement of public policies". OECD Digital Economy Papers, No. 274. OECD Publishing. Paris. [www.doi.org/10.1787/99b9ba70-en](https://doi.org/10.1787/99b9ba70-en).

15 Government Technology Agency of Singapore. (n.d.). Our role. Retrieved from [www.tech.gov.sg/who-we-are/our-role/](https://www.tech.gov.sg/who-we-are/our-role/)

In recent years, Indonesia's national strategy to digitize government systems has played a role in addressing the aforementioned obstacles in the education sector. Within this strategic framework, technology is a pivotal enabler that holds immense potential to expedite the impact of educational reforms. Specifically, the government has planned an ICT product spending budget of Indonesian Rupiah (IDR) 17 trillion for the education sector until the end of 2023. Through the incorporation of technological advancements and digital platforms, substantial opportunities exist to accelerate the effectiveness and reach of education reform initiatives, fostering a more inclusive and efficient educational landscape.

In implementing the new curriculum and its associated programs, for example, the MoECRT has taken substantial strides by developing an integrated technological ecosystem. **Among these, it has placed significant focus on the development of tools such as the Platform Merdeka Mengajar, Rapor Pendidikan, ARKAS and SIPLah. These digital solutions serve as one of the core enablers of the educational reforms initiated by the MoECRT.** Though each of these platforms operates uniquely, they are designed to integrate and interconnect with one another, fostering inclusive access for teacher's competence development needs, data-driven decision making and a more efficient administrative process.

The subsequent chapters in this report will delve deeper into the functionalities, implications and changes that these technological advancements have helped drive in reshaping Indonesia's educational landscape.

## Chapter 2

# STRATEGY

The introduction of technology to drive transformation, enhance quality, and increase efficiency is not surprising. What truly matters is how to formulate an education technology strategy tailored to the nation's context. In this chapter, we explore how technology solutions that facilitate the education revitalization plan are created.

As a smartphone-centric society, Indonesia has chosen a cell phone-based technological approach to ensure broad accessibility. This is further complemented by a laptop distribution initiative to strengthen weak links in ICT infrastructure in schools.

Empowering the education industry with technology is not new. However, it's often the case that tools are either made by speculations on requirements or are directly transplanted from other sectors. These tools therefore do not address the pain points of teachers and schools, and sometimes end up unused or causing frustration.

What stands out in Indonesia's practice is the establishment of a workflow for the development and operation of education technology products, resembling the effectiveness of the private sector. MoECRT, in collaboration with the technology team, adhering to a user-centric principle, has successfully created technology solutions highly welcomed by teachers. Relying on the merits of their own, rather than administrative orders, these products have gained reputation and recognition.

Just like the education revitalization plan, this too represents an exciting transformation. Technological tools only break temporary barriers. Advocating for collaboration, continuous evolution, and placing the end-users at the core are the enduring sources of technological power.

## **Technology integration has accelerated educational initiatives in other countries. Indonesia's technology strategy for education is carefully contextualized to the country's infrastructure readiness, prioritizing tools that address urgent needs in an accessible and effective manner**

Technology is commonly used as a catalyst to drive changes in many sectors, including education. Many countries have adopted technology as an enabler of their education intervention plans.

In Estonia,<sup>16</sup> the eKool platform serves as a comprehensive school management tool that facilitates communication and collaboration between students, parents, schools, and regulatory bodies. This platform helps deliver a better learning experience for students, as a channel for parents and schools to supervise and communicate on students' progress, as well as a learning and teaching resources portal. Based on eKool's website<sup>17</sup>, as of November 3, 2023, eKool now offers over 97 million lessons and its users have exchanged over 56 million messages to date within the portal, indicating the strong traction and usage.

In Singapore<sup>18</sup>, The Student Learning Space (SLS) was launched in 2017, offering educational resources, assessment tools, and the ability to monitor students' progress. It also includes a dashboard for teachers to track student performance and plan lessons, as well as a community gallery where teachers can share their lessons with peers and get inspired.

As observed in many countries, one of the primary benefits of embracing technology in the education space is that it drives faster implementation and wider coverage of beneficial education initiatives and provides easier access to quality educational materials. Singapore is a prime example of a country that manages to successfully harness the power of technology to improve government efficiency, maximize policy impact, and drive social and economic progress. GovTech created the Singapore Government Technology Stack (SGTS), a collection of digital services and infrastructure that all government agencies can utilize to develop their own digital applications. This initiative has significantly reduced the time and effort required to introduce new digital services, enabling a more agile approach compared to traditional technology provisions of the government.

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16 e-Estonia. (n.d.). e-Estonia Programme for e-Education. Retrieved November 3, 2023, [www.e-estonia.com/programme/e-education/](http://www.e-estonia.com/programme/e-education/)

17 eKool. (n.d.). eKool home page. Retrieved November 3, 2023, from [www.ekool.eu/en/home](http://www.ekool.eu/en/home)

18 UNESCO. (2023). Global education monitoring report, 2023: technology in education: a tool on whose terms?. Retrieved from [www.unesdoc.unesco.org/ark:/48223/pf0000385723](http://www.unesdoc.unesco.org/ark:/48223/pf0000385723)

As part of the SGTS, the MyInfo project was launched as a pilot. By offering “Tell Us Once” service, the project allows users to automatically populate personal details online, saving time to repeatedly enter the information or provide supporting documents. With the implementation of the SGTS, the pilot for the MyInfo project was successfully developed and delivered within just four months, a significant reduction in time compared to the usual year-long timeframe.

Facing the formidable challenges and the imperative to act fast, it is not surprising that Indonesia is also resorting to technology to drive the implementation of solutions to address the root causes of its educational problems. This is especially true given Indonesia’s position as the world’s fourth largest education system in which it would take decades for a systemic transformation to materialize without technological intervention.

As put by UNESCO in the 2023 Global Education Monitoring Report<sup>19</sup> on technology in education: “Technology does not need to be advanced to have an impact, it needs to be context specific.”

## **Indonesia has carefully selected its path of technological interventions, adopting an unprecedentedly organic approach to growing ed-tech applications primarily focusing on teachers**

Developing countries often lag behind their more technologically advanced counterparts in terms of their schools’ access to the internet, projectors and laptops. The infrastructure investment required for nationwide educational ICT is expensive and usually takes decades to fully rollout. Indonesia has decent electricity access, smartphone penetration, internet penetration, and low cost of data, and like many emerging economies, Indonesia is a mobile-first society where the technological revolution driven by smartphones rapidly saturated before the widespread adoption of personal computers and broadband network. This technological landscape is expected to persist in the long term. Hence its schools’ access to computers are relatively weak and the government can take targeted actions to fill gaps where needed (Exhibit 2.1).

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<sup>19</sup> UNESCO. (2023). Global education monitoring report, 2023: technology in education: a tool on whose terms? Retrieved from [www.unesdoc.unesco.org/ark:/48223/pf0000385723](https://www.unesdoc.unesco.org/ark:/48223/pf0000385723)

## The design of Indonesia's technology strategy for education has therefore taken its technological readiness into the equation

- **For students**, individual use devices are not prioritized by the Ministry. Instead, the tools enablement was more focused on school and/or teacher level. Research of other countries' experiences also reveal that it is better to entrust teachers with smart devices that students can use as tools under instruction compared to directly providing students with these devices. Improvement in learning outcomes among students who are given their own devices is negligible, if not actually worse.
- **Teachers and principals-facing initiatives** should take into account the availability of personal computers and internet limitations in some schools, particularly in rural areas. Mobile phone-based tools should ensure the widest access to teacher groups. The government can distribute school-based computers as a supplement for more substantial needs, for example, providing adequate devices for students to complete national assessment, or upskilling teachers' competencies.

### Exhibit 2.1: Indonesia's technological readiness compared to other developing and developed countries

Country performance comparison across different quantitative metrics

Indonesia versus benchmark countries, 2022

	Indonesia	Bangladesh	Cambodia	India	Vietnam	China	Malaysia	USA	Estonia
<b>National Level</b>									
Electricity access % of population	99%	92%	93%	98%	99%	100%	100%	100%	100%
Penetration of smartphones % of households	88%	87%	87%	85%	88%	89% <sup>1</sup>	97%	90%	94%
Penetration of personal computers % of households	18%	11%	16%	21%	27%	58%	91%	95%	91%
Penetration of internet % of households	78%	39%	21%	36%	76%	78%	92%	88%	90%
Download speed of mobile internet Download speed (megabits per second)	20	12	23	16	41	151	28	86	63
Data cost Average cost per gigabyte (USD)	0.46	0.32	0.42	0.17	0.61	0.41	0.45	5.62	1.20
<b>School Level</b>									
Schools with access to computers % of schools	16% <sup>2</sup>	42% <sup>2</sup>	9% <sup>2</sup>	46%	88% <sup>2</sup>	99% <sup>2</sup>			100% <sup>3</sup>
Schools with access to internet % of schools		49% <sup>2</sup>	7% <sup>2</sup>	34%	84% <sup>2</sup>	99% <sup>2</sup>			100% <sup>4</sup>

● Strong 
 ● Average 
 ● Weak

— Developing Country Benchmark — — Developed Country Benchmark —

1. The data may differ among sources and some data indicate the penetration of smartphones in China households is 93% (澎湃新闻) 2. Data only includes primary schools, 2021 3. All municipality schools 4. All schools, 2001

Source: Economist: Inclusive Internet Index (3i), Euromonitor: Economies and Consumers Annual Data, Cable.co.uk: Worldwide mobile data pricing, Annual Executive Opinion Survey from World Economic Forum, CNN Indonesia, India Education Statistics 2021-22, UNESCO GEM report, e-Estonia website, Education Estonia website, and Oliver Wyman analysis

The curriculum distribution and teacher enabler platform, Platform Merdeka Mengajar (PMM), is a paramount example to demonstrate the philosophy. By defining appropriate technical solutions in response to local conditions, it ensures technological empowerment reaches the widest audience possible and maintains the balance of the effectiveness and equality impact of educational technology.

The product is primarily designed for cell phone access (laptop access provided simultaneously) and distributed on the Android platform which is the dominant operating system in Indonesia. The app size is compressed to not exceed 6 megabytes of storage to encourage download and adoption. In addition, it has also been ensured that PMM functions well with limited bandwidth even in the disadvantaged, frontier, or outermost regions.

Recognizing that not all educators have seamless and reliable internet access, the government also provides substitutive solutions in the form of offline educational content from PMM stored in USB drives to be distributed to teachers in areas with limited internet connectivity. The distribution involves collaboration between the MoECRT with local governments. In challenging environments where connectivity is often a hurdle, the platform still remains functional, catering to the needs of both teachers and students. These deliberate decisions are rooted in the aim of making PMM as widely accessible as possible regardless of ICT readiness.

### **Besides providing software and contents, MoECRT also provides hardware solutions by distributing laptops to schools to ensure accessibility and improved experiences of digital solutions**

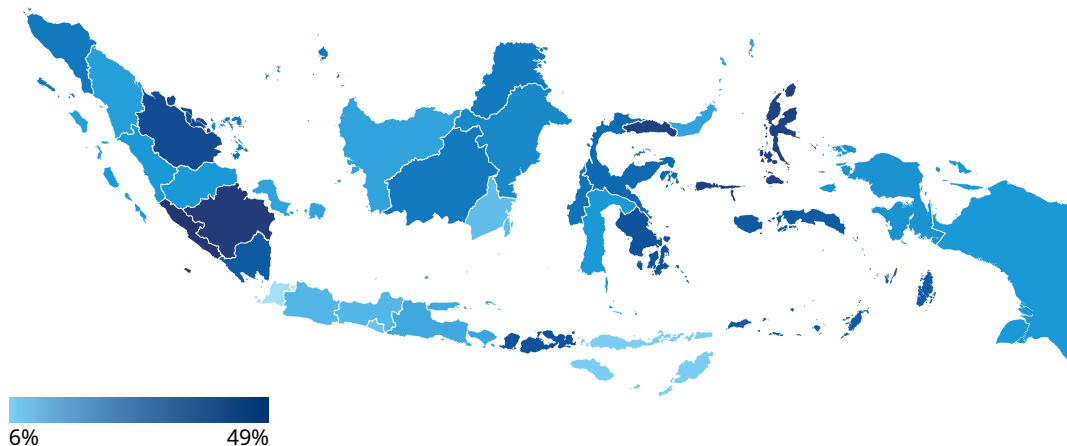
The MoECRT introduced an initiative to distribute laptops to schools in order to facilitate the implementation of Asesmen Nasional and open up access to the integrated technological platforms. From 2020 to 2023, almost 1.25 million laptops have been distributed nationwide to support teaching, learning and school management activities, all of which play an important role in ensuring the proper implementation of the Asesmen Nasional and the overall Merdeka Belajar reforms.<sup>20</sup>

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<sup>20</sup> Data from MoECRT as of November 2023

### Exhibit 2.2: Almost 1.25 million laptops were distributed to schools nationwide from 2020 to 2023

In general, the penetration rate in the rural areas is higher compared with the more advanced regions.



Source: Oliver Wyman analysis based on data the PUSDATIN, Center for Data and Information, MoECRT

### Transforming the development key principles in delivering a well-received technology intervention

Indonesia's MoECRT, specifically through the Ministry's Center for Data and Information (Pusat Data dan Informasi), works in close collaboration with a technology team which consists of professionals with collective experiences in building technological products from diverse sectors. Pushing tech interventions in the public sector led by government departments is nothing new. The problem lies in the reliability, relevancy, and integration between tech solutions.

Under the new collaborative model, the technology teams act as a thinking partner of the MoECRT, working together to support the Ministry's programs. They collaborate with the Ministry from the beginning phase of ideation and design up towards the process of delivery and distribution. This new way of working marks a substantial change from the previous vendor-client relationship where vendors developed products based on the Ministry's requests and inputs, followed by product delivery in a linear model. The development of technological tools has transformed into a more user-centric and iterative dialogue process, in which the technology team assists the Ministry in defining users' needs, then supports the development, launch, and distribution of each product in an organic manner to ensure the delivery of a relevant tech solution.



**Driven by a user-centric philosophy, the product journey evolves through iterative adaptations, a collective effort engaging policy makers and end-users**

Ineffective implementation often hinders well-crafted policies, making it challenging to instigate true transformation and drive meaningful improvements. By having user-centricity as a ground rule, the Ministry ensures that the technology to be developed addresses the pressing needs of end-users while delivering the intended impact of policies as truthfully as possible. In the following sections of this chapter, we lay out the development process of PMM platforms from multiple angles over the past few years, to illustrate how Indonesia has effectively brought forth dynamic technological solutions, that are aligned with the empowering educator-centric policy intentions.

**Exceptional educational products that truly resonate with the audience cannot be achieved overnight. That is why an evolving and iterative product development process is crucial.** To ensure progress with each product prototype and iteration adds value to the intended impact, active collaboration in every step is essential. This involves listening to the voices of stakeholders in MoECRT and of teachers and principals. Only through lively and continuous exploration can technology deliver the products that meet end-users' pain points and align with their using habits, so that retention can be achieved, and paradigm shift can be expected to happen.

The development of PMM effectively showcases how an education technology product, from conception to final delivery, through effective and collaborative interactions, surpasses the original needs of policymakers, encompassing a broader range of use cases and maximizing the value delivered to end-users.

The initial purpose of PMM was to facilitate the implementation of Kurikulum Merdeka, guiding teachers in adjusting their teaching plans based on students' assessment results. Originally conceived as a content provider, the product aimed to supply curriculum backgrounders, reference materials, teaching approaches, and instructional modules aligned to students' competency levels.

From the outset, the technical team engaged collaboratively with the Ministry's Directorate General of Teacher and Education Personnel program team, school principals and teachers, contributing to content production. Relying on the collective effort of experts, the team assisted the Ministry in crafting training modules and optimizing the curation of content collections to enhance peers' learning experiences. Simultaneously, through extensive communication with key stakeholders within MoECRT and deep interaction with users, the technology team together with policy makers discovered additional practical pain points that technology could help to address.

In addition to curriculum contents, to better meet teachers' demands for training and skill development, training features were incorporated to provide quality video training regardless of teachers' locations. Furthermore, the Ministry along with the technology team also identified the existence of offline teacher learning communities, realizing that teachers actively sought inspiration and solutions from their peers whenever challenges were encountered.

As teachers increasingly adapt to the habits of upskilling and learning, communication and interaction will become a must-have. The provision of a learning community would amplify the seeds of high-quality educational content sown by PMM, encouraging teachers to find solutions through mutual inspiration. Beyond providing prescriptive training, PMM also created a space for collaborative work, fostering inspiration among teachers. Webinars, communities, and the sharing of proof of work were subsequently included.

PMM started as a portal of curriculum content but expanded continuously throughout this iterative process. As users accumulate and their habits solidify, there is a vision of integrating more functions into PMM, ultimately evolving into a comprehensive ecosystem designed to empower educators, created by teachers and for teachers.

**We have observed a shift from the rigid ordering and delivery models of the past. Through organic and collaborative evolvment, technology solutions placed the needs of end-users at the core of every workflow. The end product not only helps facilitate the implementation of policies but also attentively fills the gaps between policy frameworks and the actual needs of the target audience. This has led to improvements in efficiency, flexibility, and a sense of user-friendliness.**

In the subsequent sections, we will witness that even without mandatory administrative enforcement, PMM continues to gain traction with widespread audiences and recognition attributed to its own merits. This underscores how the combination of education policy rollout and adaptive technological development model reduces implementation resistance, ensuring well-crafted policies to be effectively put into action.

**The success of technology products is supported by end-to-end efforts, where the collaboration between the Ministry and technology team is present in all stages of the lifecycle to make sure the product is delivered for use and eventually becomes an irreversible routine for users**

The product development process is largely divided into three main stages (Exhibit 2.3) in which each of the stages involves close collaboration between the Ministry and the technology team. Multiple functions and workflows collaboratively work in tandem, both sequentially and interdependently, to bring the user-centric principle to fruition and ensure a paradigm is established to propel culture and behavior changes (Exhibit 2.4).

**Exhibit 2.3: High level product development lifecycle by MoECRT and the technology team**

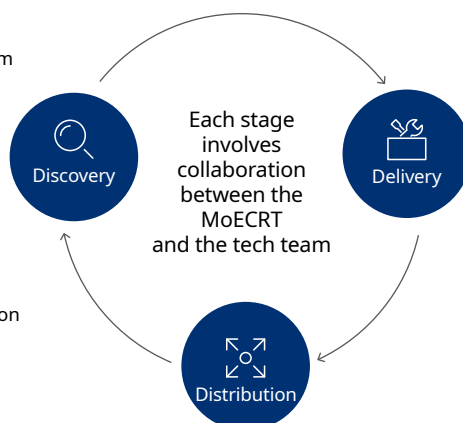
#### Discovery

Alignment on vision and problem focus with the MoECRT

Collect insights and findings by understanding user needs and contextual requirements

Explore potential technological solutions, content needs, and touchpoints for marketing

Identify policy and transformation points of interference



#### Delivery

Alignment on scope and product requirements with the MoECRT

Develop and build the product based on the agreed scope and workflow

Manage the provisioning of infrastructure

Manage content production and quality control

Align on the important goals and data tracking

#### Distribution

Develop and implement adoption strategy with cross directorates in Ministry

Implement retention strategies and activate community engagement

Provide support for customer operations

Manage content contributors and curate materials

Monitor and analyze product performance and usability

Source: MoECRT

**In the Discovery phase, the technology team begins by receiving the mandate given by the MoECRT to explore technological solutions for a specific problem.** In this process, the technology team is thoroughly engaged in the Ministry's efforts to collect the context of the problem area through various research methodologies (surveys, interviews, ethnographic models, insights synthesizing, and discussions with stakeholders and experts in the area), as well as collect insights directly via end user research. Together, the technology team and MoECRT then aligns on a shared vision. Ultimately, this results in the definition of opportunity gaps through which the product direction can be based on, forming the initial blueprint for product and technical design to move to next steps. For example, during the **discovery phase of PMM**, the process began with the Design and Research team conducting studies to gain context and deep understanding of the behavior, habits, needs, and challenges of teachers and school principals as the target end users. By combining this knowledge with usage patterns, they created robust user archetypes and their experience journey, which served as a foundation for defining the product flow and use cases.

Once the use cases are defined, the teams work in parallel to start scoping. The Design team focuses on crafting the interfaces while the engineers determine the required capacity based on the scope of the use cases. At the same time, the Marketing, Operations, and Policy teams devise strategies and identify the support needed from stakeholders to ensure that product dependencies are managed in compliance with regulations. Throughout this process, the MoECRT's steering committee is involved to provide oversight. Once the Ministry and the technology team achieves alignment, the delivery process begins.

**Delivery phase** is where the Ministry brings the product direction to life, following the agreed scope and flow in the discovery stage. In this phase, after ensuring the development environment has been properly set up, product managers, engineers, and designers worked closely to translate the design of the product into production, which includes processes from infrastructure provisioning until the sprint-by-sprint development cycles. Multiple testing rounds are conducted to ensure quality and scalability. Data and product team works hand-in-hand to brainstorm on important metrics to be tracked after the product goes live. Content team is involved in creating quality contents to be put inside the platform. Simultaneously, the marketing team gathers insights for the initial marketing strategy. Once the platform meets requirements, the Ministry and technology team prepares for the distribution phase.

**Distribution phase** is where the product is launched to the public and in a stage of continuous monitoring for potential room for improvement. Traditionally, technological collaboration typically stops after the product is introduced to users. However, the current way of working is a perpetual feedback loop to ensure that the launched product is at the best quality for users.

Supporting only the development and launch of the product is not enough if the end goal is to drive irreversible paradigm change. Hence, the technology team strategizes hand-in-hand with the Ministry in making sure the product is properly promoted, conveyed, educated to, and used by target audiences. Moreover, educators, or in fact any individual, often exhibit a tendency to stick to a proven path and changing habits require persistent work to make users stay and use more. That is where go-to-market plans and customer retention strategies come into play.

In PMM's case, the team works closely with the Ministry to leverage multiple channels of communication. The above-the-line channels (online launch event, social media, and in-app official letters) are used to repeatedly remind target audiences to make the awareness stick. While below-the-line campaigns are utilized to entrench use cases and recognition of user values among teacher communities and local governments. They approached communities in multiple regions, creating events, organizing training for the platform, and identifying advocates for the platform. The operations team assists the Ministry in the rollout plan, including in the creation of a customer service system and in providing a FAQ page to respond to various users' questions.

Policy and transformation team assists the Ministry in delivering a smooth development and rollout process, ensuring the product can be well received by the public, for instance by creating Petunjuk Teknis (technical instructions) for wider use. Once the platform launched to the public, the Ministry's Center for Data and Information supported by the teams were continuously monitoring its performance starting from product-related metrics (such as adoption rate) and technology-related metrics (such as error rate). The monitoring process allows for constant push to improve the platform for the betterment of user experience, which would then bring us back to the discovery stage should any change be required. Clearly, having the right collaborative support, insights, and expertise from various fields is essential for the successful delivery of these types of technological initiatives.

## Exhibit 2.4: Various domains engaged in the product development process

### Product management

To oversee the whole product development lifecycle, starting from discovery to distribution, and continuously monitor its performance

### Project management

To oversee and provide guidance throughout the entire product development process as a strategic collaborator for the MoECRT

### Engineering

To design and execute technical development and operations, including execution timeline planning, based on the specified scope and quality objectives

### Marketing

To develop a marketing and rollout strategy, such as employing top-down or bottom-up approaches

### Design

To create user interfaces and experiences for platforms that align with the requirements and preferences of users

### Operations

To provide assistance and support for all marketing and product-related activities

### Research

To enhance user comprehension by utilizing data to address areas of knowledge gaps

### Content management and development

To support end-to-end quality content creation, curation, and development inside technology platforms based on user needs and the MoECRT's direction

### Data

To support product-building with data-driven insights, starting from the design phase, through development, and into the iteration phase

### Policy and transformation

To propose policy changes or required transformation initiatives to facilitate opportunities for technological interventions

Source: MoECRT

## **The implementation of multiple technology platforms in Indonesia's education sector has come into fruition and achieved initial success, gaining traction with nationwide adoption**

The Indonesian government has launched several technology platforms to facilitate Merdeka Belajar, its latest educational policy. This report will primarily focus on four platforms produced by the MoECRT that include Platform Merdeka Mengajar, Rapor Pendidikan, ARKAS, and SIPLah.

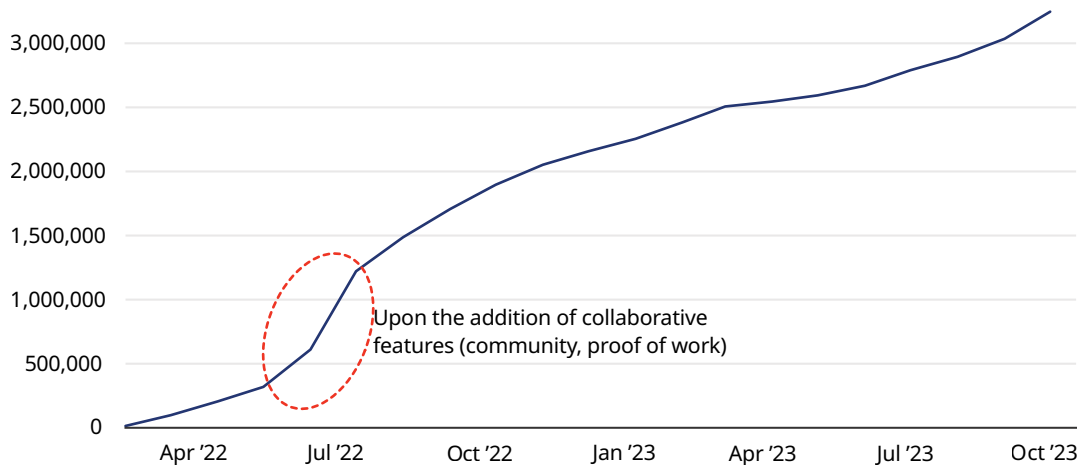
PMM is a one-stop enablement and upskilling solution for teachers. The platform supports Kurikulum Merdeka and offers multiple features, namely self-paced learning through accessible training, references of teaching modules, and crowdsourcing content and webinars that encourage community engagement.

The number of PMM users grew rapidly between May and August of 2022, almost showing a J-shaped trajectory (Exhibit 2.5). It was just during this period that the PMM platform incorporated more community attributes and interactive features. **Evolving from a prescriptive platform, it transformed into an ecosystem that caters to user needs.** The platform's popularity among users reached a new level. It is evident that adhering to a user-centric philosophy, and continuously iterating features based on user pain points, can allow educational technology tools provided by the public sector to be favorably received by users.

Rapor Pendidikan showcases the schools' assessment results in the form of key learning indicators along with root cause analysis, school planning, and improvement recommendations to principals that encourage data-driven decision-making for the following year's education planning. ARKAS offers streamlined budgeting, planning, and reporting processes of the government's funds. It is best used together with SIPLah, a procurement platform that connects schools with nine different ecommerce partners to allow for a better reach and wider selection of products.

**Exhibit 2.5: Cumulative logins of PMM after the addition of collaborative features****Users Login**

Cumulative: K-12 school teachers



Source: Oliver Wyman analysis based on data from the PUSDATIN, Center for Data and Information, MoECRT

**The platforms have been well received in the educational realm. As of September 2023, PMM had about 2.3 million Grade 1 to 12 (G 1-12) schoolteacher users,<sup>21</sup> of all G-1-12 schools, and approximately 1 million users logging in to the platform on a monthly basis. The platform has also received an average rating of 4.9 out of 5, from about 131,000 reviews on Google.<sup>22</sup> Meanwhile, about 95% out of all G 1-12 schools have used the latest 2023 version of Rapor Pendidikan. Lastly, about 220,000 (almost 100%) G 1-12 schools had registered on ARKAS, and about 150,000 G 1-12 schools (about 70%), had logged on to SIPLah by early November 2023.<sup>23</sup>**

In the upcoming chapter, we will delve into the intricate layers of Indonesia's K-12 education system, unveiling the nuanced behaviors, mindsets, and cultural shifts taking place within the units of this comprehensive ecosystem. It will also unravel the fabric of change that these platforms weave into the very essence of Indonesia's educational tapestry.

<sup>21</sup> Excluding preschools and Pendidikan Kesetaraan

<sup>22</sup> Data from Google Playstore as of November 6, 2023

<sup>23</sup> Oliver Wyman analysis based on data from the PUSDATIN, Center for Data and Information, MoECRT



### Chapter 3

# IMPACT ANALYSIS

This chapter dives into the impact assessment of the technological tools developed by the MoECRT in Indonesia, with a focus on how they help empower and upskill teachers, and alleviate the burden of Indonesia's educators.

The assessment is guided by the research-backed "Theory of Change framework" where we examine how each technological tool helps drive positive changes that are proven to be effectively linked to better teacher and students' performance. The evidence used for analysis includes interviews with teachers and principals, platform data, and survey results from a survey with 130,000 respondents.

The tools, including Platform Merdeka Mengajar (PMM), Rapor Pendidikan, ARKAS, and SIPLah, have demonstrated promising intermediate results in enhancing teacher enablement and improving the education environment.

The benefits brought by technology in timeliness and convenience are evident. It is still too soon to observe tangible academic improvements within such a short period of time. Change management always starts with behavior, mindset, philosophy, and culture changes. Initial feedback from primary research tell a story where routines of Indonesian teachers and principals are being changed. Their perceptions of curriculum, teaching objectives, and student cognition are evolving, and a stronger motivation for self-reflection and learning is emerging.

This marks a promising beginning of wider and deeper transformation in the education sector.

In the previous chapter, we detailed the MoECRT's strategies for technological intervention to help drive the reforms and policy implementations necessary to improve Indonesia's K-12 education system. We also provided a quick overview on the platforms that have been rolled out for the education sector, namely, PMM, Rapor Pendidikan, ARKAS, and SIPLah, and the laptop distribution initiative to schools. In this chapter, we will focus on assessing how these moves impact the Indonesian education sector.

The Indonesian government's key objective with Merdeka Belajar is to encourage transformation starting with education practitioners, to the ripple effects of positive shifts into Indonesia's education ecosystem, and the eventual improvement of students' competencies. Referencing to Asesmen Nasional's results from 2021 to 2022, literacy score is generally improving except for high schoolers, while numeracy and students' learning quality is increasing across all educational levels.<sup>24</sup>

The MoECRT's strategies lean towards systemic and behavioral transformations, starting from teachers learning new skills and embracing new methods of teaching and decision-making, to them applying it regularly in their daily routines, to these adjustments in approach eventually reflecting tangibly on their students' learning outcomes. Indonesia is still at the initial stage of this paradigm shift. Realistically, it might take years or even a decade for the education ecosystem to fully embrace the shift, and for truly notable changes from the students' perspective to be observed.

Therefore, in this chapter, we focus on teacher enablement factors which would eventually improve education standards in Indonesia. Improving teacher quality is a well-proven success factor in education reforms, as it was experienced by Vietnam who had exceptional student performance in the PISA compared to other developing countries. By analyzing Vietnam as a case study (see Exhibit 3.1), developing nations should recognize that technology is just an enabler in education reforms and not the complete solution. It is critical that nations first define their reform goals clearly, then identify the ways to leverage technological tools to facilitate these changes when appropriate.

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<sup>24</sup> Literacy score: elementary school experienced increase by 8.11 pp, junior high school experienced increase by 7.63 pp, senior high school experienced decrease by 4.59 pp. Numeracy score: elementary school experienced increase by 16.01 pp, junior high school experienced increase by 3.79 pp, senior high school experienced increase by 5.98 pp. Students' learning quality score: elementary school experienced increased score by 6.35, junior high school experienced increased score by 2.16, senior high school experienced increased score by 1.62. Source: Rapor Pendidikan Nasional (2023). [www.raporpendidikan.kemdikbud.go.id/login](http://www.raporpendidikan.kemdikbud.go.id/login)

### Exhibit 3.1: Vietnam: Success factors in educational reforms

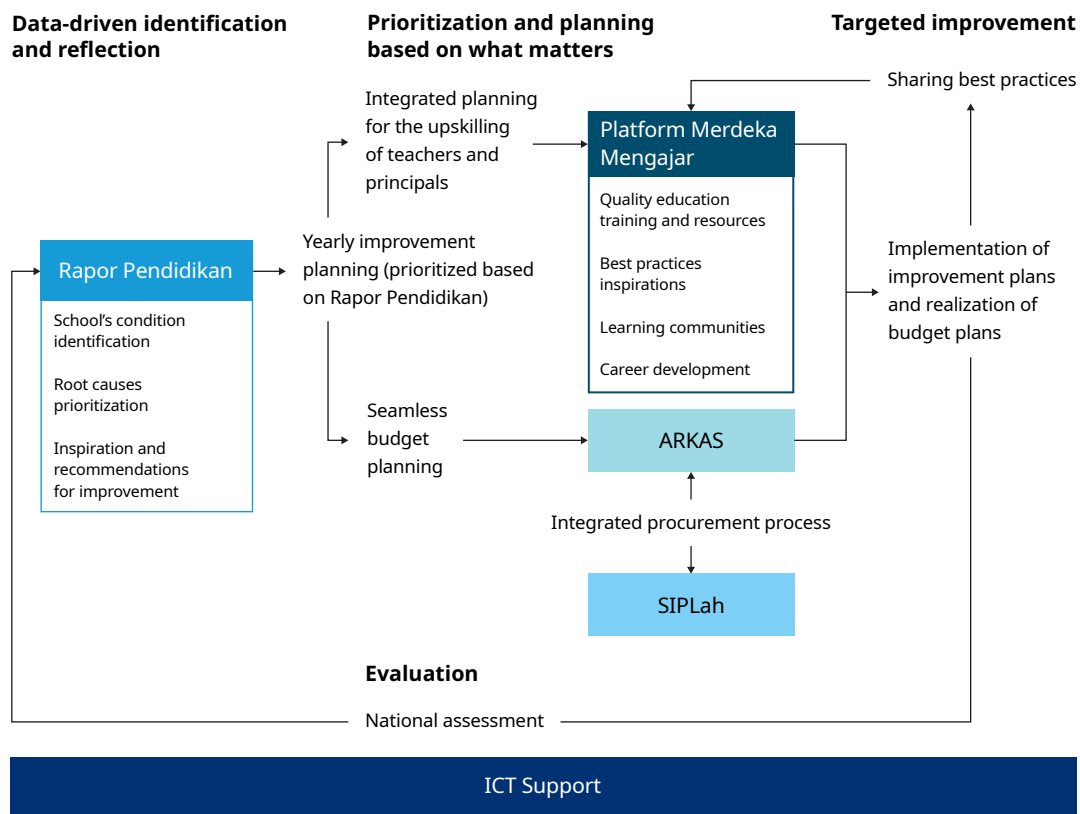
**Benchmarked against other developing countries, Vietnam is a strong outlier in basic literacy and numeracy skills. According to a World Bank study in 2020, Vietnam's education success can be attributed to the following six success factors.**

- 1 Attracting and supporting qualified teachers: deployed new pre-service and in-service training programs on a massive scale; high education qualification requirements for teachers; financial incentives, such as scholarships for teacher trainees, and higher salaries for teachers serving in disadvantaged areas rather than in cities; continuous professional development and feedback; and teacher assessment systems with continuous monitoring
- 2 High public spending focused on general education, basic inputs, and equitable access: universal primary and lower-secondary education, especially for marginalized groups, including low-income earners, children with disabilities, females, and ethnic minorities; and free school supplies for marginalized groups
- 3 Targeted investment in preschool education: universal preschool education for five-year-old children; free preschool education for disadvantaged communes; and mobilized communities and the private sector to support preschool education
- 4 Strategic use of assessments: Benchmarked student assessment system against international good practices, and reformed large-scale assessments, such as by diversifying testing methods, and competency-based assessments
- 5 High accountability mechanisms: Extensive nationwide monitoring and reporting mechanism based on peer evaluations and classroom evaluations
- 6 Sociocultural aspects of Vietnamese society: High value on education; high parental expectation; highly disciplined environments for teachers and students; and high social status of teachers due to the traditional values of respecting teachers

The initiatives under these six success factors did not involve using a lot of technological tools in the first phases of reform. In the first three decades, Vietnam focused on ensuring equitable access to pre-primary, primary, and lower-secondary education, as well as improving teacher quality. While the country also introduced several curriculum reforms in that period, success was limited due to the inadequate understanding of education pedagogy and teacher training. It was only in 2020, over 40 years since the beginning of Vietnam's education reform, that Vietnam launched the revised C2018 national curriculum that outlines plans for a technology-based education. The C2018 is a competency-based curriculum that replaces outdated teaching methods traditionally based on knowledge transmission, with technology-based education that equips students with hands-on skills essential for the 21st century. Initiatives include organizing robotics and ICT clubs in schools, as well as offering ICT as an optional subject, chosen by 70% of the students in 22 cities. This highlights the importance of technology as a means to an end. Developing nations should consider how to best leverage digital tools to facilitate their unique educational reform strategies.

Source: World Bank, (2020). Vietnam's Human Capital: Education Success & Future Challenges

While it is challenging to link the role of technology to the improvement of educational outcomes within such a short period of time due to the coexistence of other education policies, initiatives, and campaigns; this report will attempt to detail the intermediate impact of technology through a mix of qualitative findings and quantitative measures to track the positive signs towards the betterment of Indonesia's education sector in the long term.

**Exhibit 3.2: Platform integrations within MoECRT's technology ecosystem**

Source: MoECRT

The integrated technology ecosystem developed by the MoECRT plays a vital role in both realizing and facilitating Indonesia's principles for change in its education sector (see Exhibit 3.2). In evaluating the effects of these tools, we employed the Theory of Change framework (refer to Exhibit 3.3). This framework identifies the distinct intended use case for the corresponding tool and its desired positive changes, with the goal of enhancing educational outcomes. It is important to highlight that all the identified principles within the Theory of Change framework have been validated in previous studies, ensuring their academic rigor. These principles have demonstrated their significant influence in improving educational outcomes, establishing a strong basis for evaluating the transformative effects of the MoECRT's technological interventions in education. By examining whether the MoECRT's technological tools have served the purpose of delivering the mechanisms of the levers of change, we can then take a look at how these tools are contributing to the transformation that is happening in Indonesia's K-12 education ecosystem.

**Exhibit 3.3: Teacher enablement and the Theory of Change framework**

<b>Change levers</b>	<b>Mechanism</b>	<b>Relevant technology platform(s)</b>
<b>Professional development</b>	The professional development of teachers through training and upskilling plays a pivotal role in enhancing student learning outcomes. By refining teaching methods and strategies, deepening subject knowledge, and promoting effective classroom management, teachers can facilitate more effective learning experiences and foster improved academic achievements among students.	Platform Merdeka Mengajar
<b>High-quality educational resources</b>	By providing teachers with high-quality educational resources, they are able to bridge the gaps to address disparities and ultimately enhance the overall standard of education.	Platform Merdeka Mengajar
<b>Learning communities</b>	Learning communities and exchanges for teachers contribute significantly to student learning outcomes. By facilitating the sharing of best practices, fostering collaboration and networking, and supporting continuous professional development, teachers are able to ultimately enhance teaching practices and benefit students.	Platform Merdeka Mengajar
<b>Increased sense of pride and satisfaction</b>	Enhancing an individual's sense of pride is likely to result in increased productivity and job satisfaction, which would eventually lead to improved learning experiences for students.	Platform Merdeka Mengajar
<b>Data-based planning and decision-making</b>	By utilizing data in planning and decision-making, teachers can refine their instructional methods to better meet the individual needs of students, creating an environment that promotes improved learning outcomes. Additionally, the ability to identify specific areas in need of improvement empowers educators and institutions to implement targeted interventions, leading to overall advancements in teaching practices and student learning.	Rapor Pendidikan
<b>Reduction of administrative burden</b>	By reducing the burden of routine tasks, such as budgeting, planning, and reporting, teachers can allocate more time to planning lessons, focusing on individual student needs, and improving their wellbeing. This positively impacts student outcomes by creating a positive learning environment and reducing attrition rates. It also helps teachers achieve a better work-life balance.	ARKAS and SIPLah

Source: Oliver Wyman analysis

## Methodology

We referred to multiple sources to complement our assessment. We conducted interviews with selected teachers and principals to grasp a deeper understanding of the real use cases on the ground. At the same time, we leveraged data from the MoECRT on platform performance and usage, along with a large sample survey intended to collect feedback from teachers and principals across the nation. The sampling was based on purposive random sampling, where distribution was closely monitored periodically using a soft quota method during the initial week of the survey distribution. The survey eventually involved more than 130,000 respondents, with usable and valid data from about 118,000 respondents.<sup>25</sup>

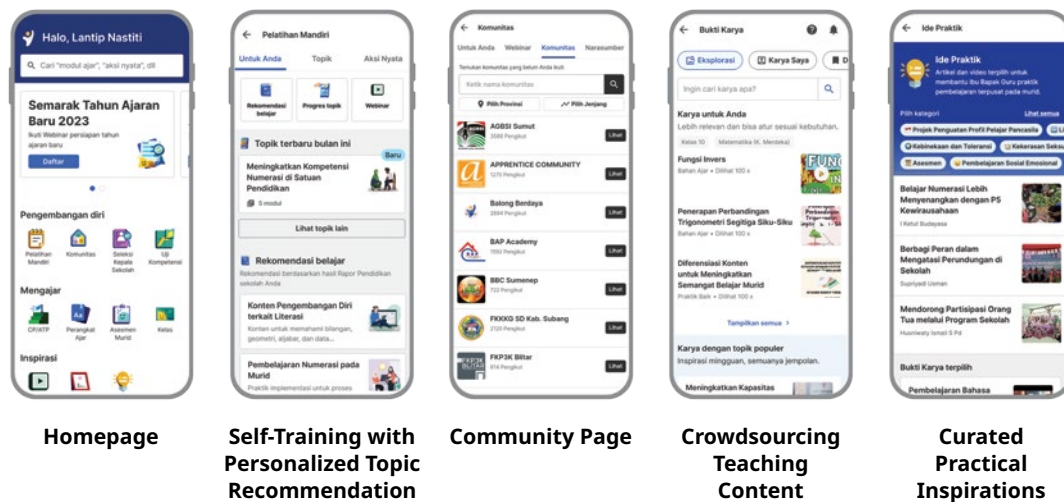
## Platform Merdeka Mengajar (PMM)

Platform Merdeka Mengajar (PMM) is a teacher-centered platform, consisting of various features to support teacher enablement, including supporting the launch and implementation of Kurikulum Merdeka, providing teaching materials inspirations through Perangkat Ajar (teaching module references), upskilling teachers through Pelatihan Mandiri (self-paced learning), and cultivating opportunities to engage in teacher communities through Bukti Karya and webinars (community sharing activities). The platform aims to encourage learning, teaching, and community sharing activities among teachers with the objective of enhancing their pedagogical competencies and encouraging a mindset of continuous growth. The following subsections elaborates the observed changes the platform has managed to drive through the lens of the Theory of Change framework.

Based on our survey analysis, nearly 60% teachers reported that they have used more than three features in the PMM, indicating that teachers have been proactively exploring the many functionalities provided by the platform. For the remaining 40% of teachers, their use cases are highly concentrated in learning “Kurikulum Merdeka”, “Perangkat Ajar (teaching module references)”, and Pelatihan Mandiri (self-paced learning).

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<sup>25</sup> Survey distribution: Principals (elementary school: 76%, junior high school: 18%, senior high school: 4%, vocational school: 2%), Teachers (elementary school: 64%, junior high school: 24%, senior high school: 8%, vocational school: 4%)

**Exhibit 3.4: Platform Merdeka mengajar (PMM) interfaces and features overview**

Source: MoECRT

### **PMM is one of the key tools supporting the Kurikulum Merdeka rollout**

The origin of PMM leads back to the Kurikulum Merdeka. The Kurikulum Merdeka was launched to pilot groups in 2021,<sup>26</sup> and then to wider audiences in the following year.<sup>27</sup> There is a unique characteristic in the Kurikulum Merdeka's rollout strategy which differentiates it from the previous curriculums. In its implementation, schools are given a buffer-period to voluntarily adapt to the adoption of the new curriculum at their own pace, based on their respective students' needs, before the formal switch took effect. Learning from the past experiences, the MoECRT has used a combination of various tools to ensure a more successful curriculum rollout.

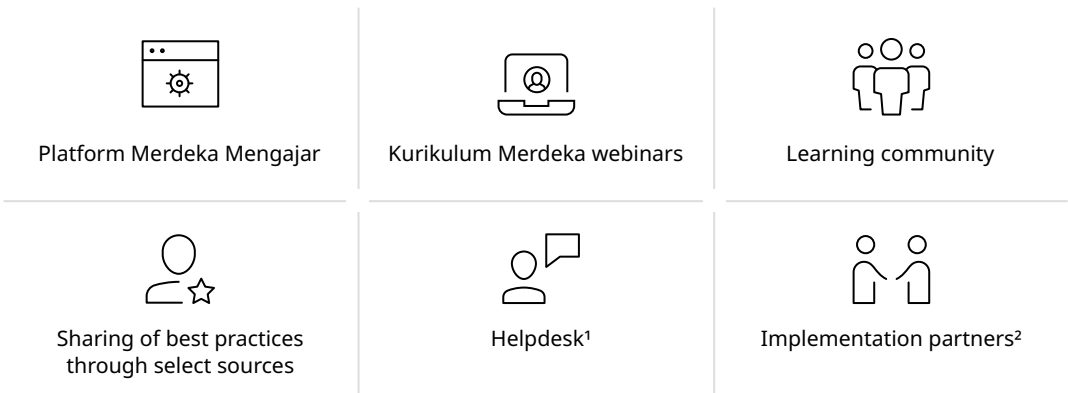
The MoECRT opted to leverage technology as one of the primary distribution strategies for several reasons. First, technology enables a direct communication channel to teachers, which helps eliminate the likelihood of information loss, particularly given Indonesia's challenging decentralized situation. When used and instructed correctly, technology can lower the barriers for teachers to try the new curriculum. With the help of technology, teachers are only one click away from learning about and referring to the Kurikulum Merdeka whenever they are preparing for classes or reflecting on the teaching they have planned.

26 MoECRT. (2023). Hampir 70 Persen Satuan Pendidikan Sudah Menerapkan Kurikulum Merdeka. [www.kemdikbud.go.id/main/blog/2023/08/hampir-70-persen-satuan-pendidikan-sudah-menerapkan-kurikulum-merdeka](http://www.kemdikbud.go.id/main/blog/2023/08/hampir-70-persen-satuan-pendidikan-sudah-menerapkan-kurikulum-merdeka)

27 Directorate General of Early Childhood Education, Primary Education, and Secondary Education MoECRT. (2022). Luncurkan Kurikulum Merdeka, Mendikbudristek: Ini Lebih Fleksibel. [www.ditpsd.kemdikbud.go.id/artikel/detail/luncurkan-kurikulum-merdeka-mendikbudristek-ini-lebih-fleksibel](http://www.ditpsd.kemdikbud.go.id/artikel/detail/luncurkan-kurikulum-merdeka-mendikbudristek-ini-lebih-fleksibel)

Lastly, technology dramatically accelerates the delivery of information. Instead of spending time to brief each branch of local government separately on the new curriculum, the MoECRT was able to disseminate the information directly in one go, while also making it accessible to all teachers at the same time. In addition, technology ensures that the information received by teachers aligns with the government’s intended message, as the absence of technology increases the likelihood of discrepancies in the information received by teachers due to the multiple intermediaries involved in its transmission.

**Exhibit 3.5: The Kurikulum Merdeka’s six deployment tools**



1. Via WhatsApp

2. Multiple partners which would be informed to local education departments

Source: MoECRT

Of the Kurikulum Merdeka’s six deployment tools, PMM managed to stand out as the primary implementation lever. Given its easy and flexible access, the platform reaches teachers even in the most secluded areas of the country. At first glance, the launch of this type of technology platform on a nationwide scale seemed challenging. However, Indonesia’s technological readiness has risen rapidly, with the COVID-19 pandemic being one of the main catalysts. PMM has reached the majority of Indonesia’s G 1-12 teacher force with 85% of them having logged in to the platform as of October 2023.



**Exhibit 3.6: Cumulative user logins to the PMM as of October 2023**

Highly concentrated in the Java area due to the populous nature of the region



Source: Oliver Wyman analysis based on data from the PUSDATIN, Center for Data and Information, MoECRT

In particular, PMM acts as the primary trusted source for teachers when they refer to all of the Kurikulum Merdeka's related items. It allows teachers and principals to understand the curriculum's concept and structure, and gives them exposure to learning outcomes, learning objectives, and teaching modules. Further, it helps them create independent learning classes through differentiated types of learning and utilize the assessment results from the Kurikulum Merdeka.

PMM has proven itself to be helpful for teachers and principals in familiarizing themselves with the new curriculum content. According to a 2022 The Education Standard, Curriculum, and Assessment Agency (BSKAP) survey involving approximately 290,000 teachers and principals to evaluate the effectiveness of MoECRT's deployment tools,<sup>28</sup> 90% of the participants utilized the PMM to gain insights into the Kurikulum Merdeka. However, the use case of PMM differs between the two groups. School principals tend to use it to keep up with the Kurikulum Merdeka's updates and searching for materials to assist teachers' learning, while teachers mainly use PMM to prepare their teaching modules. A quantitative study conducted by Oliver Wyman in 2023 gave similar results as the previous study. Teachers and principals mainly use PMM to gain a better understanding of the concept and implementation of the Kurikulum Merdeka. A section that gives important information on the new curriculum (named Tentang Kurikulum Merdeka) is popular among teachers and principals, as 71% and 84% of them, respectively, have used it at least once.

The platform has helped principals realize that the improvement of learning quality should be focused on their students. About 57% of principals reported this, indicating a key mindset shift that shall pivot the next wave of pedagogical strategy upgrades.

<sup>28</sup> Survey conducted by BSKAP by MoECRT in 2022 to ~290,000 teachers and principals

Additionally, by accessing PMM, principals have learned more about the Kurikulum Merdeka, and passed on their learnings to teachers in their schools. While for teachers, about 49% reported that PMM has supported their efforts to upskill through the Pelatihan Mandiri feature, and about 45% reported that it has helped them better understand the varied nature of their students.

### Diversified references for teaching modules

Since the implementation of Kurikulum Merdeka as part of the Merdeka Belajar initiatives, Indonesian teachers are no longer restricted in developing teaching modules in accordance with the guidance provided by the textbook. They are given the authority to modify their teaching plans to best accommodate the needs of their students, thereby achieving better learning outcomes.

Through the Perangkat Ajar (teaching modules) feature, PMM allows teachers to have more options on top of the mandatory textbook as references to develop their own teaching modules. The MoECRT has approved the modules available within the Perangkat Ajar, ensuring that teachers, despite having the flexibility and freedom to modify their teaching modules, are still able to deliver quality input for their students, facilitating the smooth implementation of the Kurikulum Merdeka as well.

**There are around 21,000 Perangkat Ajar modules which has been downloaded 7 million times by around 880,000 G 1-12 teachers or principals' unique accounts as of November 2023, which indicates in general, one teacher would download eight Perangkat Ajar materials when using PMM.**<sup>29</sup> Oliver Wyman's survey findings indicate that about 39% of the survey respondents use the Perangkat Ajar multiple times a week, regardless of whether they are located in disadvantaged, frontier, and outermost areas (3T)<sup>30</sup> areas or not. This indicates that, in general, the Perangkat Ajar is used regularly nationwide. According to the survey findings, the three main use cases of the Perangkat Ajar are to access quality teaching materials (84%), access references for creating teaching plans (77%), and access various assessment activities so as to track the students' learning progress (69%). These findings are in line with the reason for the development of the Perangkat Ajar. The Perangkat Ajar's modules have proven to be relevant in supporting the teachers' daily work, given that a big proportion of them, about 43%, have used the materials for the majority of their teaching subjects. Recalling the Theory of Change framework, providing teachers with high quality teaching materials is important to ensure they are able to deliver top-notch lessons with minimum quality gaps from one region to the other.

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<sup>29</sup> Oliver Wyman analysis based on data from the PUSDATIN, Center for Data and Information, MoECRT

<sup>30</sup> Daerah Tertinggal, Terdepan, Terluar

The Perangkat Ajar has brought an extensive positive impact to teachers on top of being an alternative database of references for teaching modules. Our survey indicates that after using the Perangkat Ajar, 80% of the participants have tried to use contextual approaches in the classroom based on their students' needs, and 76% have tried various teaching methods in the classroom. This shows that teachers are more willing to experiment in the classroom to achieve improved learning experiences for their students. Furthermore, after using the Asesmen Murid and Perangkat Ajar features, **61% of the teachers surveyed now realize that each student has unique characteristics, 53% have gained a deeper understanding of the principles of student-centered learning, and 49% are now able to adjust their teaching methods so that these are better suited to the individual needs of their students.** These findings suggest that the mindset and behavior of the teachers have evolved to become more student-focused, a determining factor in the enhancement of the overall standard of education in Indonesia.

### Teachers can upskill themselves anytime, anywhere based on their needs

Professional development has always been at the heart of teacher enablement, as witnessed and proven by the multiple practices seen in other countries. By training and upskilling teachers, they are able to improve their teaching methods and strategies, increase their own knowledge, and improve their classroom management, all of which should ultimately help their students learn more effectively and achieve better academic outcomes.

Observing use cases from India, for example, with the 2017 launch of the national learning platform (DIKSHA),<sup>31</sup> teachers and students now have access to teaching and learning material from an open education resource platform. India's National Education Policy 2020 also emphasizes using the DIKSHA platform for teacher upskilling initiatives.<sup>32</sup> To improve teaching quality, for instance, interactive and engaging teaching materials are uploaded to the platform in regional languages for teachers to be used in class. For the teachers' professional development, the platform also offers training courses and teacher assessments. Moreover, the teachers can receive training to suitably integrate e-content into their teaching practices.

Indonesia is investing robustly in training programs for its teachers as well. Prior to the COVID-19 pandemic, almost all the training for teachers and principals was conducted offline. A small proportion was organized through *balai pelatihan* (training center) in certain areas, but these were not centralized nor supervised by the MoECRT, since these regions have their own local authority. However, offline training led to several complications.

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31 Government of India. (n.d.). Diksha: National Digital Infrastructure for Teachers. Retrieved from [www.india.gov.in/spotlight/diksha-national-digital-infrastructure-teachers](http://www.india.gov.in/spotlight/diksha-national-digital-infrastructure-teachers)

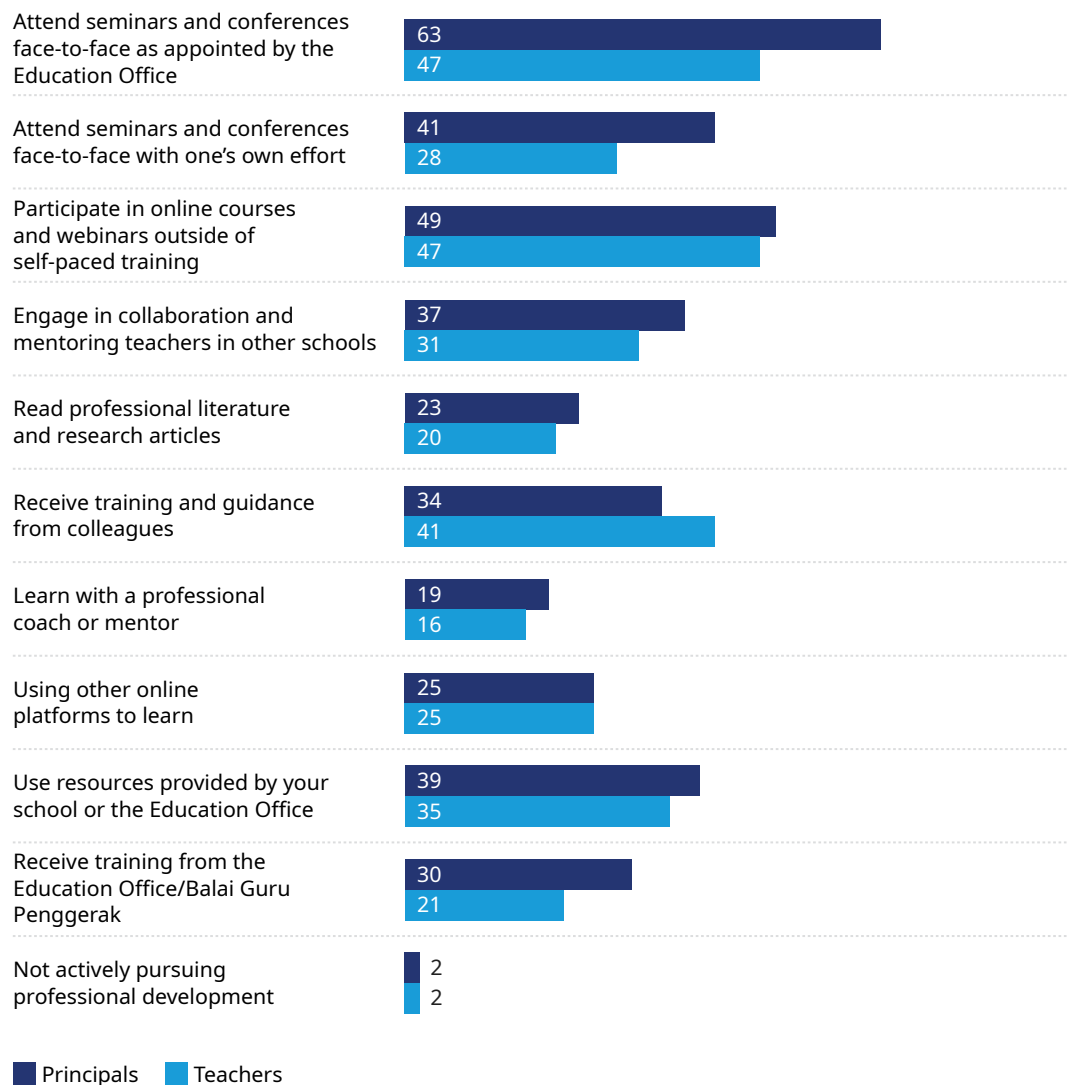
32 Ministry of Education India. (2020). National Education Policy 2020. Retrieved from [www.education.gov.in/sites/upload\\_files/mhrd/files/NEP\\_Final\\_English\\_0.pdf](http://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf)

**Firstly, there was a lack of transparency in the mechanism for selecting participants to attend official training sessions.** The majority of both principals and teachers from the Oliver Wyman survey, namely 63% and 47%, respectively, mentioned that the usual practice was to attend face-to-face seminars and conferences as appointed by their education office (see Exhibit 3.7). One of the teachers interviewed said favoritism was prevalent, as only a selected few teachers were given the opportunity to attend important formal training sessions; receiving training was therefore perceived as a privilege. **Secondly, other teachers emphasized that offline training sessions had strict time constraints.** As a result, they had to skip teaching lessons, and on some occasions, did not have sufficient time to digest the training materials properly. **Thirdly, for teachers that reside in rural areas with limited transportation access, traveling to attend offline training would be challenging and might lead to psychological stress which can hinder teachers from receiving the full advantage of the training process.** These examples clearly show that the teachers needed supplements or alternatives on top of the offline training sessions. In addition, when the COVID-19 pandemic began in 2020, there was a big impact on the overall logistics of attending offline training sessions, further increasing the need for having online training as an option.

**Using PMM has boosted my confidence. It's reassuring to know that I have a reliable source just a click away. If I ever need to review certain materials, I can always refer back to the platform and refresh my memory.**

Principal from SMPN 1 Ratahan, North Sulawesi

### Exhibit 3.7: The ways teachers and principals actively pursued professional development prior to the existence of the PMM



Source: Teachers and principals survey (n=118,000), and Oliver Wyman analysis

Realizing the urgency of widening the access to teacher training, the Ministry introduced hybrid learning, allowing offline and online training using Learning Management System (LMS) as the online learning tool. However, the online training has a limited quota since it would require trainers and facilitators to lead the session from distance. Therefore, the Ministry would still need to invest enormous amounts of human resources and time allocated to deliver quality live training, with no guarantee of a similar outcome received by teachers given the varied quality of trainers.

Understanding the complications of the previous platform, PMM comes in with *Pelatihan Mandiri* (self-paced learnings) product with pre-recorded materials which allows teachers to have the same opportunity to enroll in training topics based on their needs and schedule. As the PMM also offers a broad selection of training topics — including how to differentiate learning processes, guidance and counselling, literacy, and numeracy content, to life-skills education — teachers are free to choose the topics that pique their interest. After the teachers complete their training by conducting *Aksi Nyata* (real-life practice) and validated by the MoECRT, they also receive formal certificates which can help them with their career advancement. Having these training features co-exist with other teacher enablement features in PMM, such as the *Perangkat Ajar* and various community webinars, further amplifies PMM's role in creating a holistic learning experience for teachers.

**PMM's training features have been well received by the teachers. As of early November 2023, on average 84% use PMM for learning-related activities, such as the *Pelatihan Mandiri* and the various webinars.<sup>33</sup>**

In terms of training participant numbers, from October 2022 to October 2023, **the total participants for each training topic from *Pelatihan Mandiri*, is roughly 4.1 million — almost seven times more participations<sup>34</sup> in this period than the cumulative number of offline participants in 2019, which was around 620,000 participants.<sup>35</sup>** These findings indicate that Indonesia's teachers are actively using the *Pelatihan Mandiri*, and it is making a real impact, particularly in improving the teachers' accessibility for upskilling and professional development.

After using the *Pelatihan Mandiri*, the surveyed teachers<sup>36</sup> felt that the first positive change they experienced was being able to enhance the classroom learning experience, and fostering increased student participation, engagement, and enthusiasm. They also feel more encouraged now to explore and apply innovative teaching methods to ensure the teaching and learning process is more interesting and effective for their students. Lastly, they have become more reflective, and are now able to implement better classroom management strategies to create discipline and a more conducive learning environment. Therefore, we can conclude that the various training topics available on the platform have successfully inspired teachers to try new teaching approaches for improved learning experiences in class. These positive changes from the teachers have also benefited their students, as seen from the overall general increase in the students' learning quality score in the *Asesmen Nasional*, which takes into account aspects of class management, psychological support, and learning methodology (see Exhibit 3.8).

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33 Oliver Wyman analysis based on data from the PUSDATIN, Center for Data and Information, MoECRT

34 Oliver Wyman analysis based on data from the PUSDATIN, Center for Data and Information, MoECRT Data is not counted on unique users that enrolled to any trainings, but instead counting unique participants for each training topics.

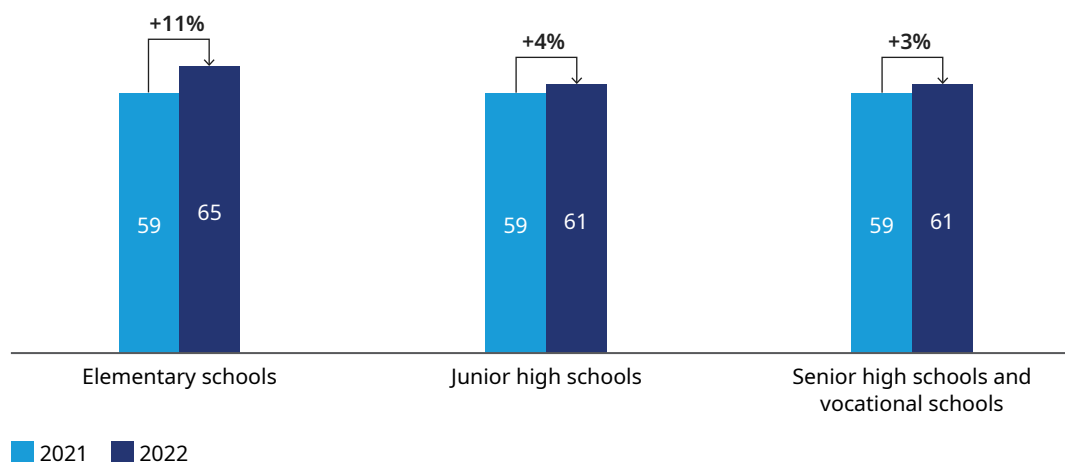
35 Directorate General of Teachers and Education Personnel MoECRT. (2020). *Naskah Akademik Pembentukan Balai Besar Guru Penggerak (BBGP) dan Balai Guru Penggerak (BGP)*

36 Oliver Wyman survey

**If I had to choose one word to describe PMM, it would be “satisfied.” PMM fulfills all my desires as a teacher, from the ability to learn according to my needs and engage with the community to expand my network. In PMM, I also find numerous tips to solve the problems I encounter and learn about Kurikulum Merdeka.**

Principal from SDN Haruyan, Banten

**Exhibit 3.8: The growth of students’ learning quality scores from 2021 to 2022**



Source: Rapor Pendidikan Nasional, 2023

### Encourage community engagement activities

Besides improving their skills, the next step in empowering teachers is creating a community where they can engage in knowledge sharing activities. Research has shown that teacher communities and exchanges can be effective in improving teaching practices and student outcomes by providing opportunities for collaboration, networking, and sharing best practices. The socialization among teachers is a productive avenue for professional growth and the collective improvement of the teacher workforce within the educational sphere. Better engagement within the teaching community encourages a shift in behavior towards curiosity and continuous improvement, ultimately leading to a more effective educational system.

### Exhibit 3.9: Peru's teacher mentorship and support program

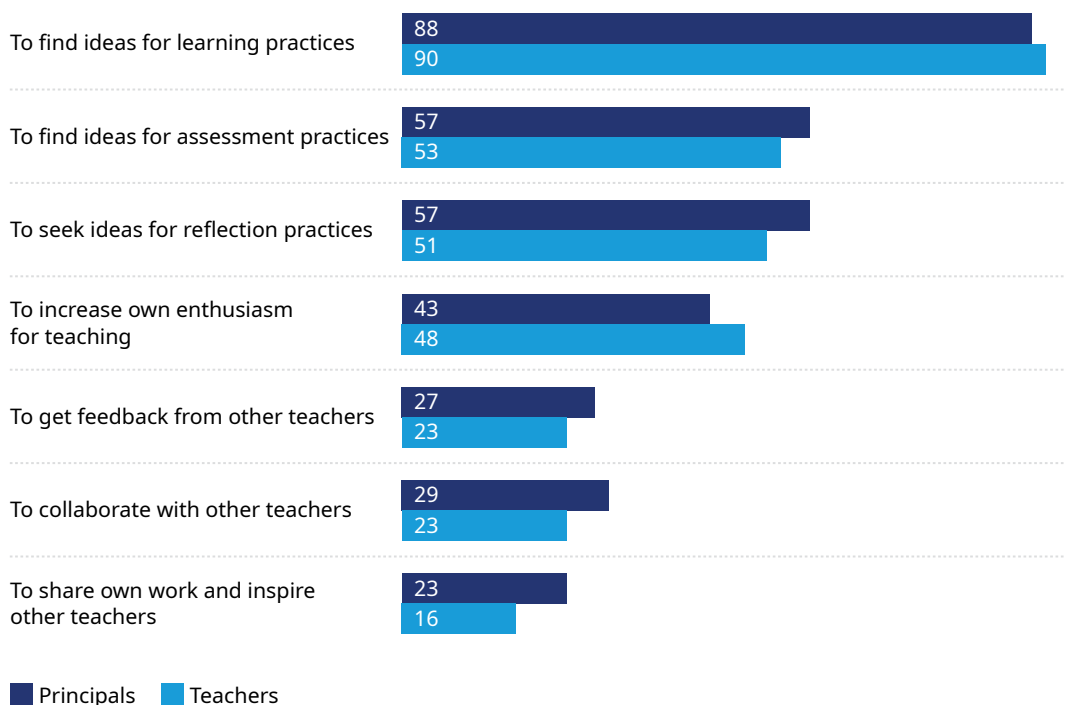
Low-fee private schools are a growing phenomenon in many low and middle-income countries, where privatization is promoted by governments in the hopes of resolving the unavailability or perceived inadequacy of public education. This is also seen in Peru, where even though public schooling is free, 22% of students attend low-fee private schools. In Lima (which accounts for one-third of the country's population), 50% of students attend private schools.

Peru's largest private school network, Innova Schools, which serves over 50,000 students in 63 schools, has adopted a system that promotes teacher mentorship and support, fostering a culture of peer-to-peer feedback among educators from different schools. Experienced teachers who have demonstrated excellence in their teaching abilities are selected and trained as mentors to provide feedback to teachers in other schools. This system offers pedagogical support to teachers in key subject areas, facilitating their professional growth and ensuring learning quality. This is especially helpful in supporting new teachers in overcoming challenges they encounter in the classroom. Additionally, this initiative promotes the sharing of good teaching practices across the national school network.<sup>1</sup>

Source: OECD. (n.d.). PERU Innova Schools — Colegios Peruanos. Retrieved from [www.oecd.org/education/ceri/PER.IS.SystemNote.pdf](http://www.oecd.org/education/ceri/PER.IS.SystemNote.pdf)

The MoECRT, through PMM's Bukti Karya section provides multiple community engagement features. Bukti Karya is a crowdsourcing content functionality which allows users to engage through comments and feedback. It also has **community webinars** where teachers can participate as speakers to share their best practices or learn from other teachers as participants, and **community groups** where they can join like-minded individuals to exchange ideas.

### Exhibit 3.10: The utilization of the bukti karya, video inspirasi, and ide praktik

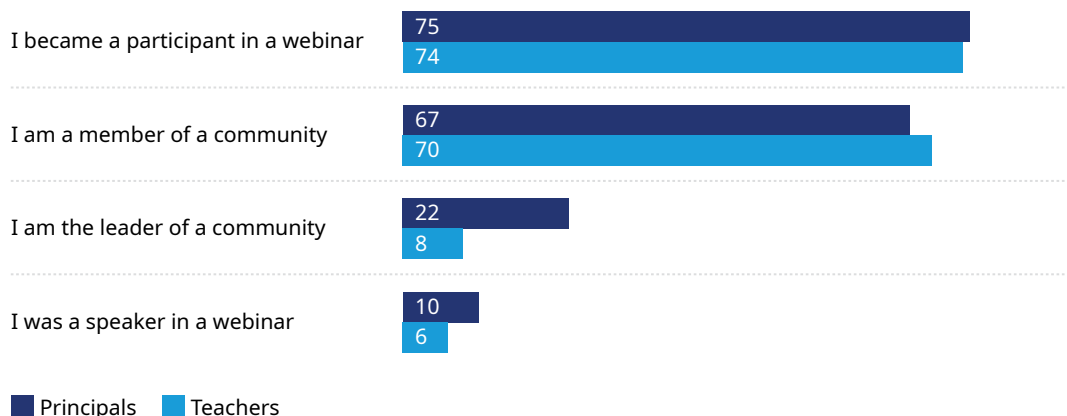


Source: Teachers and principals survey (n=118,000), and Oliver Wyman analysis



According to our survey, teachers and principals use the Bukti Karya and other inspiration-inducing tools, such as the Video Inspirasi (inspirational videos) and Ide Praktik (practice ideas) mainly to find ideas for learning, assessment, and reflection. This shows that the teachers' tendency is to seek practical forms of learning and their associated examples, as experienced by their peers, which they can then use as inspiration for their own planning. As of early November 2023, there were about 670,000 Bukti Karya submissions in total. Of these, 34% had garnered feedback via comments from the user comments,<sup>37</sup> indicating dynamic knowledge sharing among teachers. The survey also found that, after using the features, majority of the surveyed teachers and principals now feel that they have more support to get inspiration for diverse classroom teaching methods (84%). Half of those surveyed also feel more encouraged to share their learnings with other teachers and to experiment with different teaching methods and techniques. Moreover, half of the surveyed reported that they have observed an increase in student engagement and morale after trying new teaching methods.

**Exhibit 3.11: The role in the community feature on platform Merdeka Mengajar**



Source: Teachers and principals survey (n=118,000), and Oliver Wyman analysis

**Through the utilization of the community feature in PMM, I can connect with individuals who share similar interests and engage in discussions about our needs. This enables us to find competent sources that facilitate meaningful discussions, ultimately making a positive impact on the community.**

Teacher from SMAN 2 Pamekasan, East Java

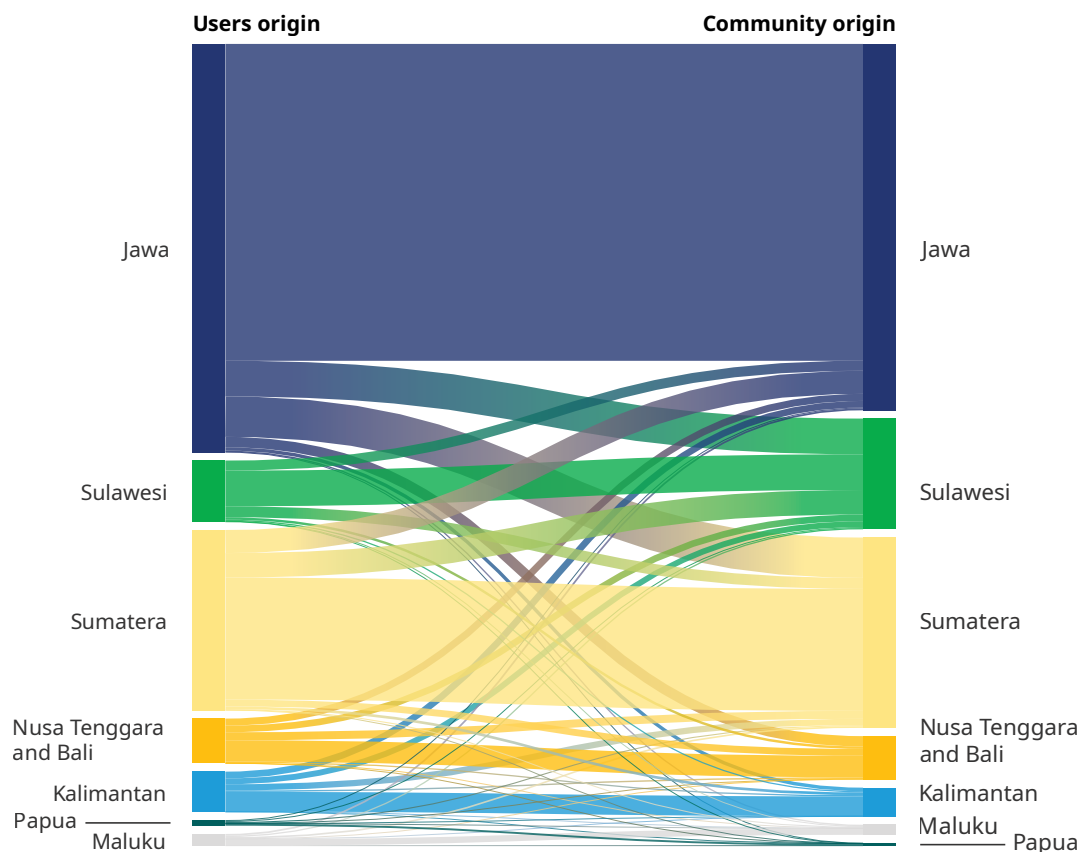
<sup>37</sup> Oliver Wyman analysis based on data from the PUSDATIN, Center for Data and Information, MoECRT

Our survey also found that 74% of the teachers and principals have become participants in webinars and 70% of them have joined at least one of the community groups. Based on our analysis of data from PUSDATIN, as of November 2023, there are almost 44,000 community groups formed on the platform. From mid-2022 to October 2023, there were about 9,000 community webinars conducted on the platform. According to our survey, the key drivers for the surveyed teachers and principals to use this community feature are for sharing of best practices, references, and knowledge (82%), for collaborating with others in creating teaching plans and strategies (80%), and to discuss the teaching challenges faced and to brainstorm for potential solutions with fellow teachers (71%). These numbers show the strong motivation of teachers in community sharing activities, and that they have benefited from being leaders or participants in the various activities.

Data from PUSDATIN shows that, as of October 2023, 34% of PMM unique users have joined a community on the platform, meaning PMM has proven to facilitate users connections and learnings from peers through communities, although only 11% of PMM users were involved in community sharing activities.<sup>38</sup> As the mindset and culture shift slowly continues, teachers will become more confident to share their opinions or content, which in turn will further increase their status within the platform.

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<sup>38</sup> Includes: submit Bukti Karya or is an admin for community with webinars or creates Cerita Praktik or creates Perangkat Ajar. Source: Oliver Wyman analysis based on data from the PUSDATIN, Center for Data and Information, MoECRT

**Exhibit 3.12: Mix of regions in teacher community participation**

Source: Oliver Wyman analysis based on data from the PUSDATIN, Center for Data and Information, MoECRT

Exhibit 3.12 demonstrates the status of community participation and the progress of region mix. The left axis of the graph represents the actual residence of teachers, while the right axis displays the registered location of community organizers. We found that through the connection of community features, there is a shift in cross-regional communication. Out of all communities, there are approximately 29,000 communities consisting of teachers from different regions. Teacher communities are no longer confined to their respective regions; the network effects of mutual inspiration and learning among teachers have significantly strengthened. Teachers in remote and underserved areas should be able to benefit greatly from this enhanced interaction.

PMM is also utilized by teachers in rural areas. Out of the total 190,000 teachers serving in rural areas, 43% of them, or around 80,000 teachers have used PMM. The three provinces with the highest PMM penetration in rural areas are Southeast Sulawesi (62%), the Nusa Tenggara area (48%), and North Sumatra (47%). Despite the room for further improvement, PMM has offered access to more inclusive learning and training for teachers rural settings.

### **Positive morale and mindset boost for teachers**

There is a widely recognized global disparity between the significant impact that teachers have on society and the level of recognition they receive for their contributions. Therefore, one of the key missions of Indonesia's Directorate General of Teachers and Education Practitioners has been to improve the dignity and pride of the teaching profession, slowly but surely bringing prestigious recognition towards the job. Increasing sense of pride in an individual will likely lead to improved work efficiency and satisfaction,<sup>39</sup> which further pushes the importance of improving the pride and self-esteem of teachers in Indonesia's education sector.

According to the results of our survey, 72% of the teachers and principals surveyed feel inspired after using PMM. This links directly to the various ways PMM is able to provide the teachers with new learning experiences. Of the survey respondents, 46% have increased self-esteem and 42% perceive themselves to have a higher competency after using PMM. This links directly to the upskilling opportunities available within PMM. Moreover, 52% of the surveyed teachers and principals have experienced an increase in their sense of professional pride since utilizing PMM.

### **Broader professional development and career advancement journey**

Going forward, PMM is not only limited to the enablement of teachers' capabilities, but it will also gradually expand the reach of teachers to meet their broader professional development needs.

One of the highlighted use cases of PMM is to act as a channel to build up candidate pools for school principals. The former process of principal appointment was centered on the local governments, however the data used as a foundation for capacity planning, including the selection and placement of principals, was scattered in different databases and required manual consolidation, which made the process complicated and opaque.

Now, supply and demand for principals are aggregated under one platform. Teachers who graduated from Pendidikan Guru Penggerak (Mover Teacher program) that is part of Merdeka Belajar initiatives, are all trained and positioned as instructional leaders, and are included in the selection pool for principals. This ensures that the candidates are truly the best in their class. The whole cycle of activities in the selection process will be recorded through the platform, and teachers will receive notifications if they are shortlisted as principal candidates. Once they have been appointed as principals, they have the opportunity to participate in training programs that aim to enhance their role as instructional leaders through PMM.

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39 Pawłowska, Beata. (2020). Pride in Teachers' Everyday Work. Conditions and Contexts

Moreover, teachers may face challenges in recognizing their strengths and weaknesses in their profession, that is why engaging in self-review activities is crucial. In order to facilitate this process, PMM offers Refleksi Kompetensi (self-assessment for teachers), a self-assessment tool specifically designed for teachers. This tool measures teachers' competence in various areas such as pedagogy, character, social skills, and professionalism. It does so through a short questionnaire that prompts teachers to reflect on their practices. Based on their responses, the system determines the teachers' competency level and provides data-driven recommendations for targeted learning. This helps teachers identify the areas they need to focus on for further development.

On top of the features within the platform, PMM is also interconnected with Rapor Pendidikan. After the results from Asesmen Nasional have been reflected on Rapor Pendidikan, to make referencing relevant materials easy for teachers to explore, **the system generates personalized learning recommendations for the school based on their scores.** Therefore, when teachers from the same school access PMM through Rekomendasi Pembelajaran (learning recommendations), they will receive identical learning recommendations that are customized based on the Rapor Pendidikan results for their school. As such, each school will receive unique learning recommendations that align with their specific needs, which are easily accessible by all teachers in the school.

**These initiatives indicate that PMM will progressively become a one-stop solution for teachers, providing support in various aspects such as career advancement and promoting a data-driven approach in their daily teaching practices.**

## Rapor Pendidikan

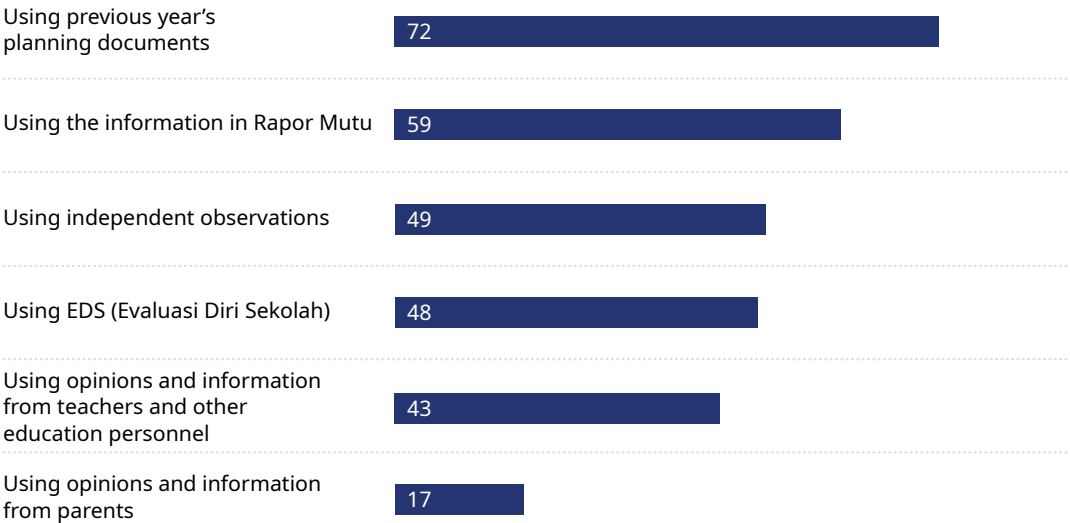
### Status quo and previous pain points

**In Indonesia's educational units, decisions related to planning are primarily based on anecdotal evidence rather than data-driven approaches.** Many educational actors tend to avoid complex data analysis, including tasks like comparing multiple data sources, identifying underlying causes, and engaging in reflective processes. This hesitation is primarily driven by uncertainty regarding the methodologies involved and a lack of motivation. Additionally, the fragmented nature of data sources further dampens their enthusiasm. In turn, the process of comparing and analyzing data is not prominent, resulting in a lack of data-based problem identification.

Instead, there is a tendency to resort to status quo solutions without any real reflection of the root cause of a school's problem and thoroughly investigating the actual issues at hand. This inclination can result in misguided school prioritization which leads to inefficient budget realization and ineffective outcomes. According to our quantitative study, the majority of respondents (72%) confirmed that their schools relied on previous year's planning documents as references in planning the new school year's activities and budget.

**Exhibit 3.13: Sources of information and references for planning the new school year before the Rapor Pendidikan**

Percentage of total mentions



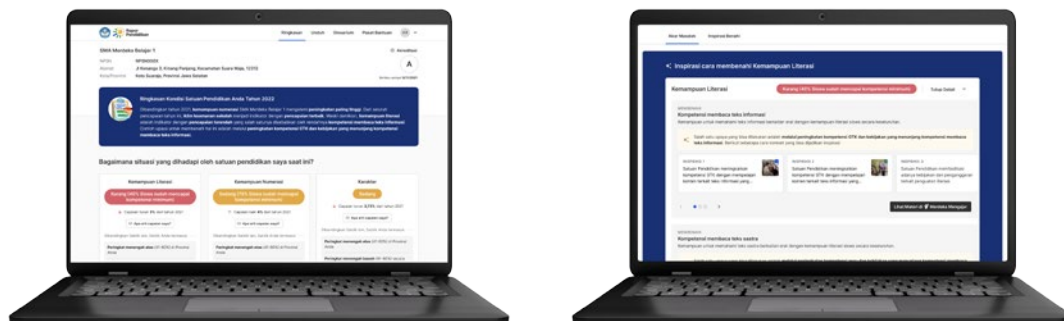
Source: Teachers and principals survey (n=118,000), and Oliver Wyman analysis

This trend strongly suggests a limited reliance on data-driven methodologies in the decision-making process.

Additionally, there is a need for more manual efforts to collect and analyze data from various sources, which can be time-consuming and prone to human errors. Nevertheless, it is critical to shift towards a more data-driven approach in planning, where data analysis and reflection can play a central role in first identifying problems and then designing effective strategies for education quality improvement.

## Intervention from MoECRT

### Exhibit 3.14: User interface of Rapor Pendidikan



School's problem prioritization page

School's improvement recommendation page

Source: MoECRT

**To hone a more data-driven behavior and mindset, the MoECRT has introduced a solution called Rapor Pendidikan. This digital platform serves as an all-encompassing resource accessible to educational units and offices nationwide.** By integrating various educational data sources, including Asesmen Nasional reports and cross-sector analyses, Rapor Pendidikan aims to provide a comprehensive perspective on the accomplishments and challenges encountered by each educational unit and region. Beyond merely identifying areas in need of improvement, this platform aims to encourage self-reflection and enables the creation of effective strategies for progress based on robust data.

Further, Rapor Pendidikan simplifies the process of collecting and analyzing data from various sources, thereby reducing the burden of managing multiple evaluation documents and rectifying inaccurate success metrics. In doing so, it assists educational units in enhancing the quality of their education. Utilizing the data provided, Rapor Pendidikan aims to empower educational units to take concrete steps not only in identifying issues but also in reflecting on achievements, thereby laying the groundwork for developing activity plans and budgets.

## Impact assessment

**As of October 2023, about 95% of all of Indonesia's G 1-12 schools have adopted Rapor Pendidikan.** In an effort to assess the efficacy and practical implications of Rapor Pendidikan's intended objectives, our survey and analysis is centered on addressing two pivotal aspects.

Firstly, we delved into the engagement of principals, who are expected to be the main users of Rapor Pendidikan and assess their familiarity and proficiency in comprehending and utilizing the platform's provided information to make informed decisions and implement strategic improvements within their educational institutions. Additionally, we have sought to evaluate how extensively Rapor Pendidikan is utilized within schools for broader purposes.

Specifically, we focused on whether schools actively use the platform to reflect on their educational quality, aiming to identify areas for improvement, and subsequently utilize the data to enhance their overall educational standards.

Our survey highlights prevailing consensus regarding Rapor Pendidikan's primary advantage, with approximately **81% of the survey respondents expressing that its key benefit lies in facilitating access to data intelligence for more effective planning of educational activities**. In the opinion of the respondents, Rapor Pendidikan plays a crucial role in providing information that identifies priority areas for improvement within their educational landscape. Principals typically engage with Rapor Pendidikan about one to two months before the academic year begins, particularly in May and June, demonstrating a focused use case to utilize the information on hand to make suitable adjustments to their annual planning and preparation just before the start of the new academic year. 69% of the principals engage in discussions and follow up on recommendations stemming from the root cause analysis within Rapor Pendidikan.

Additionally, our survey reveals that a significant proportion of the principals (61%) affirm that their schools moderately rely on Rapor Pendidikan to integrate the platform's data and insights into their annual school activity programs and educational curriculum planning. However, only around 48% of principals possess a high level of awareness and proficiency in interpreting, analyzing, and effectively following up on the information provided by Rapor Pendidikan regarding their school's performance. Following these discussions and data analysis, they strategically implement three pivotal activities to steer their schools towards improvement.

Notably, a substantial 79% **leverage the results** to prioritize areas requiring enhancement, while approximately 61% delve into **comprehensive result analysis** by downloading the detailed Rapor Pendidikan report and get recommendations for **data-based planning** for their educational unit. Additionally, nearly 60% actively initiate discussions with various school members, particularly teachers, emphasizing a collaborative approach to address vital developmental aspects within their educational institutions. These active engagements underline the principals' targeted focus on critical areas to foster improvement within their schools.

**The findings above highlight a notable shift in the education actors' behaviors towards a data-driven approach, as facilitated by the many features of Rapor Pendidikan.** With the primary objective of fostering behavioral change towards data-driven decision-making, coupled with the provision of a user-friendly interface, relevant data illustrations, and actionable guides, schools are witnessing a profound transformation in their practices. **This shift signifies a crucial movement towards prioritizing informed decision-making and strategic planning based on tangible data insights.** The evolving landscape within these educational units demonstrates an encouraging trend, as they move away from traditional observation-based methodologies and embrace a more dynamic, data-centric paradigm. It represents a promising trajectory towards more informed, and contextualized educational practices, underscoring the importance of leveraging data for transformative change within the educational landscape.



**Before using Rapor, the school relied solely on teacher discussions without specific benchmarks. The references were limited to individual children's report cards or the results of annual competitions with other schools. With the introduction of Rapor, there is now a clear and comprehensive reference for effective planning.**

Teacher from SDN Haruyan, Banten

## ARKAS

### Status quo and previous pain points

A pervasive challenge in Indonesia's educational landscape is that its **principals and teachers often have supplementary roles in addition to their primary responsibilities**. These include them serving as, among other things, treasurers and school operators. Notably, approximately 9% of those surveyed specifically hold the critical role of managing the school's operational funds as treasurers. **This phenomenon of dual roles significantly impacts the overall dynamics and workload within educational units.**

Some educators in Indonesia face significant challenges as they juggle additional responsibilities alongside teaching. This is commonly seen in elementary schools where teachers double hat as treasurer, or in schools with significantly limited human resources. For example, at the end of each month, it is not surprising that the focus on teaching diminishes for educators with this added responsibility, as they grapple with the crucial task of managing funds from the Bantuan Operasional Sekolah (BOS) program to pay administration bills, so as to keep their schools operating smoothly. The complexity of this financial responsibility is further compounded by the lack of professional accounting knowledge among those entrusted with these roles as well as the manual and intricate nature of this whole process, which is a formidable issue nationwide.

Moreover, there is a prevailing sense of apprehension and uncertainty among educators who are also treasurers, as there is a constant worry about the accuracy of their data inputs, which could lead to potential problems during audits. **This additional anxiety adds to the already overwhelming challenges faced by these individuals**, hindering their ability to fully concentrate on their primary roles, which in turn can negatively impact the quality of education. **Such circumstances underscore the urgent need for support and resources to alleviate these burdens and so enable educators to focus on their core responsibilities.**

**Administering BOS reporting is complex, especially manual tax input. I often work overtime at home until 1 or 2 AM, concerned about data synchronization which may delay fund allocation to BOS. With ARKAS, no more manual work needed as the tax input is automated and integrated with Dapodik and SIPLah.**

Teacher from SMPN 1 Bandar Lampung

### **Intervention from MoECRT**

The ARKAS (Aplikasi Rencana Kegiatan dan Anggaran Sekolah) platform is a financial management system developed by the MoECRT that is specifically designed to alleviate the burdens faced by educational units in managing operational funds, such as BOS funds in schools throughout Indonesia. The ARKAS platform streamlines budgeting and accountability processes by providing an easy and transparent workflow. From January to October 2023, all Indonesia's G 1-12 schools used ARKAS, as required by the government to properly manage their BOS funds.

The introduction of the ARKAS platform has created positive expectations for significant improvements in carrying out financial reporting, effectively reducing administrative loads while aiming to instill confidence in accuracy and compliance. The system itself is designed to be user-friendly, aiming to both enhance safety in planning and reporting, and mitigate the risk of violations resulting from human error. By utilizing the ARKAS platform, educational units hope to ensure meticulous and accountable planning, record-keeping, and reporting of how they use their BOS funds on a punctual basis, in line with government regulations. The main objective of this approach is to ensure smoother and more compliant financial operations within the education sector, benefiting educational units and in turn improving education quality across the country.

### **Impact assessment**

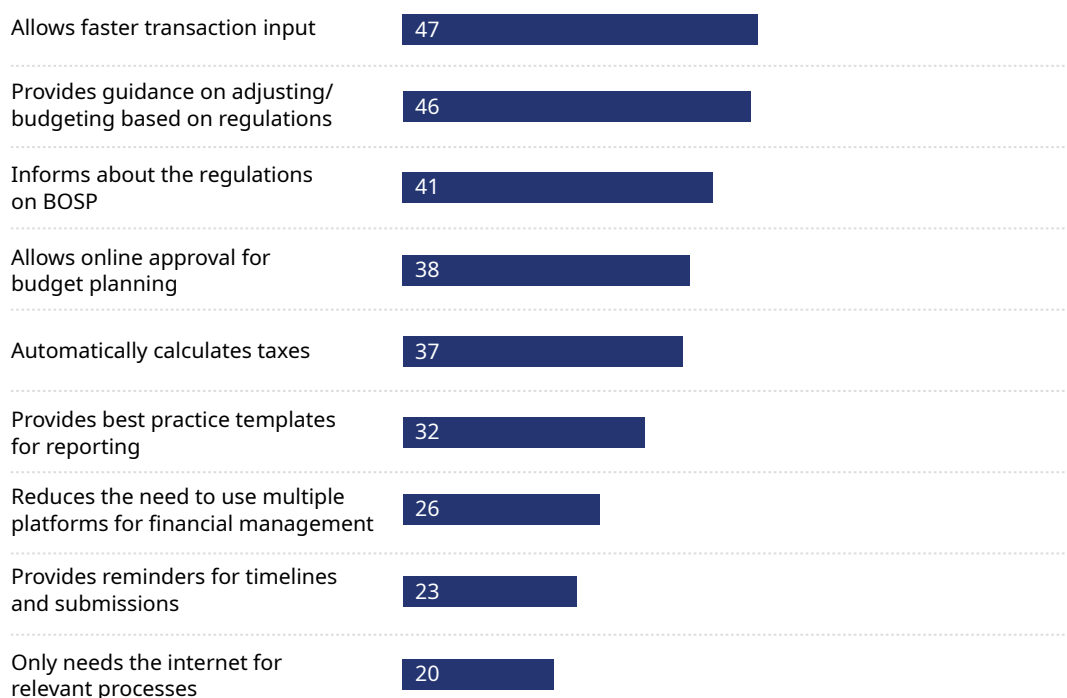
To evaluate the impact of the ARKAS platform and its effectiveness in assisting education actors, specifically principals, and improving educational standards, it is essential to ask the right questions. Our analysis primarily focuses on determining whether the platform significantly reduces the administrative burden on principals, thereby saving them valuable time. Furthermore, it explores how principals allocate the time that they have saved, by specifically examining whether they utilize it to observe and evaluate the quality of teaching provided by their teachers, and in turn support their teachers in enhancing their teaching methodologies to help improve the education quality within respective schools.

The extensive results obtained from our survey analysis demonstrate a substantial agreement among principals and teachers who hold dual roles about **the ARKAS platform's effectiveness in improving their efficiency and time saved for financial reporting.**

This agreement is consistent across various regions, encompassing both 3T and non-3T areas. Roughly 75% of the respondents from all these regions recognize the platform's capabilities in streamlining processes and saving their time, contributing to an increased efficiency in their administrative responsibilities. This increase in efficiency and time saved can be attributed to two key factors that drive the utility of the ARKAS platform. Firstly, nearly half of the respondents emphasize the ability to input transactions faster due to the platform's user-friendliness. Secondly, approximately 46% of the respondents appreciate the guidance provided by the ARKAS platform in adjusting their budgets according to relevant regulations, expediting their decision-making processes.

### Exhibit 3.15: The main benefits of using the ARKAS platform

Percentage of total mentions



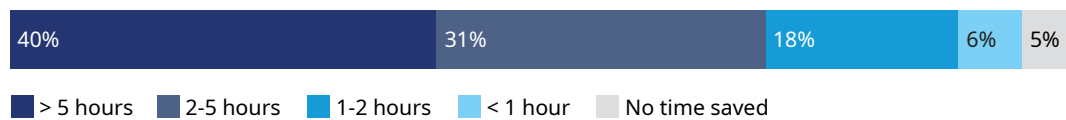
Source: Teachers and principals survey (n=118,000), and Oliver Wyman analysis

**Furthermore, the positive experience with the ARKAS platform has generated a sense of security** among approximately 67% of the survey respondents. Notably, about 78% acknowledge the platform's provision of regulatory guidance, while about 70% appreciate its automated tax calculation feature based on transaction types, ensuring compliance and accuracy. This highlights the reality that financial management is not a core competency of teachers, as emphasized above. Operators and treasurers, who already bear the weight of interpreting BOS regulatory documents, often feel apprehensive about managing their schools' finances. To address this challenge, ARKAS bridges the gap by translating regulatory instructions into practical steps within the app. This not only instils a sense of confidence and security but also streamlines financial compliance for individuals without extensive financial expertise.

■  
**Currently ARKAS complies with the latest technical instructions for BOS and there is also a notification when an entry is made incorrectly, these features have taken away all my worries during reporting.**

Teacher from SDN 2 Mlaya, Banjarnegara

The majority of respondents believe that the ARKAS platform significantly transformed their financial workflow for the better. This positive transformation is attributed to the automation of expense tracking, reduction in manual data entry, and simplification of reporting and budget approval processes. Importantly, the implementation of the ARKAS platform resulted in a notable amount of time saved. The general consensus among survey respondents suggests that the platform has helped them save more than five hours per month in carrying out their financial reporting tasks, enabling them to utilize this reclaimed time for various purposes. While about 45% of the respondents claimed that they utilized this time saved to focus on improving the quality of teaching at their school and to focus on enhancing their teaching process, 52% of the respondents admitted using the time saved to socialize with their colleagues instead.

**Exhibit 3.16: Time saved using ARKAS and the utilization of the reclaimed time****Time saved using ARKAS per month****The utilization of the reclaimed time**

Percentage of total mentions, %



Source: Teachers and principals survey (n=118,000), and Oliver Wyman analysis

**In conclusion, the implementation of the ARKAS platform has contributed to improving the overall sense of security of educators, and streamlined their financial reporting workflow, resulting in significant amounts of time saved.** In addition, the reclaimed time allows teachers to not only observe and enhance the quality of their teaching but also dedicate their focus to improving teaching methods and activity planning. This ultimately contributes to the overall improvement of the educational experience for students.

## SIPLah

### Status quo and previous pain points

Beyond the challenges faced in financial reporting, **educational units also encounter an additional obstacle in procurement procedures.** Prior to the introduction of technological interventions, procurement processes were predominantly conducted offline, characterized by a localized approach. This **decentralized system resulted in accountability and audit issues**, particularly due to the fact that the acquisition of school supplies was mostly funded by government resources. **The absence of an integrated system with standardized procedures and centralized oversight posed significant challenges**, amplifying concerns regarding accountability and transparency in the procurement process within educational institutions. These circumstances highlighted the need for an improved system and centralized oversight to ensure accountability and transparency in procurement practices within each educational unit.

### Intervention from MoECRT

**The MoECRT developed the SIPLah platform as a tailored solution to address the challenges encountered in the procurement process.** This online platform serves as a marketplace for schools, aiming to advance the procurement process for educational units, commonly referred to as Satuan Pendidikan or Satdik. **The platform prioritizes transparency and streamlines convenience in administrative operations and reporting, ensuring compliance with government regulations when engaging with vendors.** Similar to the ARKAS platform, SIPLah's commitment to transparency provides teachers with a sense of assurance. **Furthermore, the SIPLah platform seamlessly integrates with the ARKAS platform, simplifying transaction reporting by automatically incorporating procurement records into the budgeting of each educational unit.**

Additionally, by connecting schools with multiple MoECRT-approved vendors through online means, the SIPLah platform expands the procurement options beyond local suppliers, providing educational units with greater flexibility in meeting their needs. Through the SIPLah platform, educational units are expected to enhance the efficiency, transparency, and choice of their procurement processes, ultimately benefiting both the units and the vendors involved.

### Impact assessment

In 2023, approximately 27% schools have logged in to SIPLah. Among these schools, 63% have successfully completed their transactions on the platform. Interestingly and expectedly, some regional disparities were observed. As a comparison, 52% of schools in Bali Province have logged in, and out of those, 75% have completed their transactions on the platform. On the other hand, in the remote province of Papua Barat Daya, 2% of schools have logged in, and a mere 14% of them have completed their transactions. Further, when we compare schools in the less-developed 3T regions with non-3T regions, we notice a significant difference in login and completion rates. In average, 4% of schools in the 3T regions have logged in, but 55% of them have completed their transactions on the platform.

In contrast, in non-3T regions, the login and completion rate are higher, with an average of 25% of schools logging in and out of those, 64% of schools successfully completing their transactions. These statistics highlight the disparities in access and utilization of the SIPLah platform across different regions and types of schools. Despite regional disparities, the data reveals that SIPLah has managed to extend its reach to rural areas, although the rate of usability adoption has been relatively slow.

The analysis of our survey results reveals that the respondents with dual roles in educational units feel that the SIPLah platform provides them with significant advantages in the procurement process. These respondents recognize SIPLah's time-saving attributes, with 75% highlighting its efficiency in expediting the search for relevant products and 62% highlighting its convenience in documentation for each transaction. It also allows prompt delivery of goods to schools within approximately one to two weeks, as recognized by 72% of those surveyed. Lastly, SIPLah enables them to procure goods at prices that are aligned with the Standard Unit Price (Standar Satuan Harga), as acknowledged by 73% of the respondents.

**Using SIPLah, the delivery was very fast; it arrived in a week. Before that, the delivery took a while, as it took 1-2 months for the book to be available.**

Teacher from SMP Satu Atap YPPK Tanah Merah, Boven Digul, Papua

SIPLah simplifies the process of finding essential goods and services by providing a wide range of products. According to the survey's results, the platform's inventory consists of a diverse selection of items, ensuring schools have access to a comprehensive array of options. This is especially beneficial in remote areas where access to a variety of products may be limited. SIPLah streamlines the procurement process, ensuring efficiency and seamlessness in both centralized and remote locations by providing products from diverse categories, addressing concerns about availability and supply. These collective benefits highlight the transformative impact of the SIPLah platform on the procurement process within educational units, fostering efficiency, savings, and accessibility.

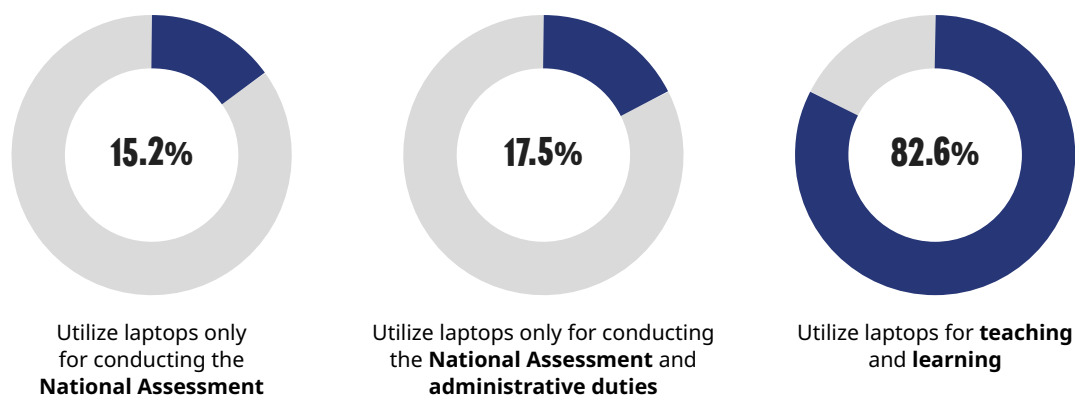
## Laptop distribution

As referenced in chapter 2, **in line with the push for the digitalization of education and the vision of the Merdeka Belajar, the MoECRT has implemented a strategic initiative to distribute essential ICT tools, specifically laptops, to educational institutions.**

This move aims to ensure widespread access to technological resources throughout the education sector. Initially, the MoECRT provided computers for school with the primary goal of enabling students to take the national assessment (Asesmen Nasional) in a digital format. This initiative has since evolved into a valuable opportunity for teachers to enhance their teaching capabilities. The provision of these computers also helps empower teachers to access a wide range of learning materials, participate in online classes, and ultimately contribute to their professional development. While students remain in class to utilize the computers, the primary focus is now on equipping teachers with additional resources to enhance their skills.

To ensure equitable access to technology-enabled education, significant efforts have been made by the ministry to distribute laptops across Indonesia. **To date, a substantial number of 1.2 million laptops have been distributed to 38 provinces throughout the country.** This distribution initiative aims to bridge the digital divide and provide students in various regions with equal opportunities to engage in digital learning. By equipping schools with laptops, the government and educational institutions are empowering students to develop essential digital skills, fostering creativity, critical thinking, and collaboration. The widespread distribution of laptops signifies a commitment to educational equity and serves as a catalyst for educational transformation, enabling students to thrive in the digital era.

**Exhibit 3.17: Utilization of distributed laptops**



Source: 2023 census data from the MoECRT's Directorate General of Early Childhood Education, Primary Education, and Secondary Education

In addition to their role in national assessments, a notable percentage of schools, accounting for 17.5%, have recognized the versatility of laptops and utilize them also for administrative matters. This dual functionality showcases the adaptability of laptops in supporting various aspects of school operations. From managing student records to organizing schedules and resources, laptops have become essential tools for streamlining administrative tasks, enabling schools to operate more efficiently. The majority of schools (82.6%) have embraced laptops as essential tools for teaching and learning purposes.



These devices have revolutionized the classroom experience, empowering educators to deliver engaging lessons while providing students with access to a wide range of educational resources. The widespread adoption of laptops for teaching and learning reflects their effectiveness in enhancing the educational experience and preparing students for the digital age.

In summary, the high registration rate of laptops among schools, the utilization of laptops for national assessments and administrative tasks, the widespread adoption of laptops for teaching and learning, and the extensive distribution of laptops across Indonesia collectively demonstrate the commitment to leveraging technology to enhance education and provide students with the tools they need to succeed in the modern world.

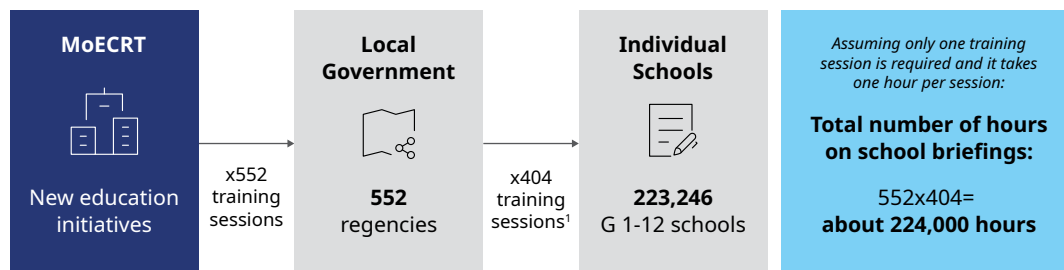
## Conclusion

Our assessment of the technological interventions initiated by the MoECRT demonstrates a notable impact on its intended users, aligning with the set objectives based on data analysis and qualitative findings. The adoption of this portfolio of technology tools is not limited to just the first-tier cities, but it is also making its way into rural areas. This widespread adoption highlights the inclusive nature of MoECRT's tech intervention, as it provides access to all teachers regardless of their location. Furthermore, the perception of utilizing tech products remains consistent across different areas, indicating that users from both urban and rural areas see the value and benefits it brings.

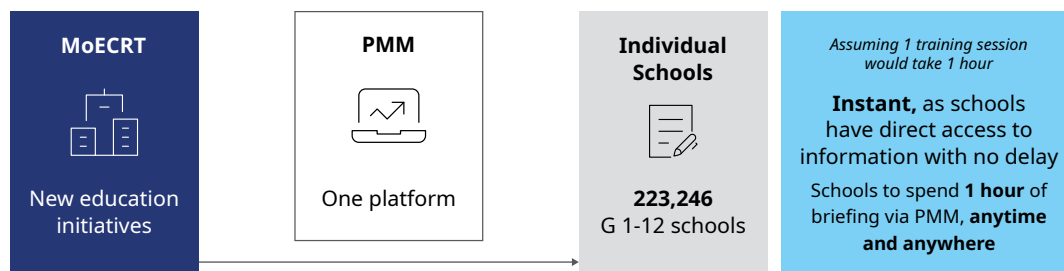
MoECRT has made notable advancement as technology yields tangible efficiency improvements in the implementation of policy. To demonstrate, imagine if the Ministry chooses to implement education initiatives using traditional methods without involving technology, it will take a significantly longer time to achieve maximum impact. Relaying information on one training module from the MoECRT to local government and eventually to each school in the regions might take up to 224,000 hours, with high risk of information loss. In contrast, by using PMM, the MoECRT can simply upload the new information in one go and instantly reach teachers without compromising the information quality (see Exhibit 3.18). This highlights the power of leveraging technology in educational settings, as it eliminates unnecessary time-consuming cascading processes and allows for immediate dissemination of information to the end target user.

### Exhibit 3.18: Illustration of the Ministry conducting fully offline trainings nationwide without any technology intervention

**Before:** In a decentralized system, the MoECRT disseminates information on new initiatives through **cascading layers**. This is **time-consuming** and **risks information degradation**.



**After:** Through the PMM, new information is **immediately disseminated to the target users** (teachers). This **saves time** and **preserves information quality**.



1. Assuming schools are evenly spread among regencies

Source: Oliver Wyman analysis

However, it is important to acknowledge that the full extent and magnitude of the education system transformation will likely unfold gradually over an extended period of time. Insights from other countries indicate that significant transformations, particularly in terms of student achievement, typically require long-term efforts for education actors to get mobilized and to embrace changes willingly. Substantial progress in student achievement in the form of improved literacy and numeracy scores is generally observed within three to eight years following reforms, with variations across elementary schools, high schools, and districts.<sup>40</sup> Evidence from the international education community highlights the need for patience and persistence to witness tangible and lasting results in educational systems.

So, despite the potential efficiency improvement, tangible measures of academic success and transformation brought about by these technological interventions will likely become more apparent over the longer horizon. To maintain the momentum of this positive shift, MoECRT is actively guiding transformation towards becoming irreversible by empowering agents of change. This understanding emphasizes the importance of sustained commitment and continued evaluation to fully realize the potential of these interventions in driving meaningful change in the education sector in Indonesia.

<sup>40</sup> Fullan, M. (2001). Whole school reform: Problems and Promises.

## Chapter 4

# FUTURE OUTLOOK

The education space is undergoing rapid transformation. Globally, there is an irreversible trend towards utilizing technology to make education smarter, more accessible, and focused on individual development. Accessibility and cost-effectiveness of technology for individual use now surpasses any previous era, which coincides with the unprecedented creation and integration of high-quality educational content.

For emerging nations, it is an opportune window to catch up. Indonesia's endeavors today align with this overarching trend. In this chapter, we will unveil the central philosophy and priority behind Indonesia's chosen educational technology path— the empowerment of the education unit, rather than full-scope digitization. We will also explore the future vision of these technological solutions that have driven positive change as of today.

However, the fruition of educational transformation is not borne overnight. It must be emphasized that the positive change these solutions evoke require sustained effort and patience over time for them to be truly solidified. The direction of educational reform and intervention requires constant monitoring, by assessing the efficacy of strategies through evidence-based evaluation. Once there is an accurate diagnosis and articulated strategy, it demands persistence.

According to UNESCO's Global Education Monitoring (GEM) Report 2023, the three most important challenges in the education space globally today are equity and inclusion, quality, and efficiency.

The global shift towards adopting digital solutions in education to enhance teaching and learning and also dealing with the underlying challenges is not new. When implementing technology-enabled education reforms, pioneers such as Singapore have identified the development of digital competencies as a focus area to help prepare citizens to thrive in a world of volatility, uncertainty, complexity, and ambiguity (VUCA) marked by rapid technological advancements.

This chapter explores technology-enabled educational reforms from the following angles. Firstly, the backdrop of the global effort to leverage technology to empower education actors by accelerating and expanding the impact of proven best practices in the education space to solve the challenges of quality, efficiency, and inclusiveness. Secondly, successful global case studies of technology-enabled education reforms and how Indonesia's strategy and philosophy are positioned in that landscape. Thirdly, how Indonesia's spearheading initiatives are already yielding promising results in the mindset and behavioral shifts of education actors and poised to bring about more expansive and profound long-term changes going forward.

## **There has been a global shift towards making education smart, more accessible, and personalized**

Over the past 20 years, learners, educators, and institutions have widely adopted digital technology tools across all education levels.

There has been a global push for access to the internet, incorporating digital devices in learning, and access to online learning platforms. In 2022, about 50% of lower secondary schools worldwide were connected to the internet for pedagogical purposes, according to the same UNESCO report. Drawing from the results of the PISA 2018, among 15-year-old students in OECD countries, 65% were enrolled in schools whose principals agreed that teachers had the technical and pedagogical skills to integrate digital devices in instruction, and 54% were enrolled in schools where an effective online learning support platform was available.<sup>41</sup> In higher education, digital textbooks comprise a considerable revenue share for major publishers like Pearson and McGraw-Hill.<sup>42</sup>

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41 PISA 2018 results (Volume V): Effective policies, successful schools. OECD Publishing. [www.doi.org/10.1787/ca768d40-en](https://doi.org/10.1787/ca768d40-en)

42 Bouchrika, I. (2022, 18 July). Digital transformation and history of the textbook in higher education. [www.research.com/education/textbooks-digital-transformation](https://www.research.com/education/textbooks-digital-transformation)

At the forefront of technological application, cutting-edge technological themes such as artificial intelligence (AI), have already been employed to empower and transform the education sector. In a global survey conducted by UNESCO, it was revealed that 11 out of 51 governments had developed and implemented AI curricula.<sup>43</sup>

Examples include intelligent tutoring systems that track student progress and adjust the level of difficulty to create an optimal learning path, AI that supports and assesses writing assignments, and AI that has been applied to immersive learning experiences and game.<sup>44</sup>

Overall, it is expected that the rising trend of incorporating technology in the education sector is here to stay as governments worldwide continue driving technology-enabled education reforms.

### **Even without resorting to the fanciest technologies, leading nations in education have navigated their way through progressive and gradual transformation to harness the potential of technology and address pressing educational challenges**

Technology holds the potential to tackle educational challenges in various ways. Providing affordable access to quality education resources bridges the gap for disadvantaged groups, including those in remote areas where access via traditional channels is too difficult or costly. Technology can also enhance the learning experiences tailored to individual needs by offering interactive or self-paced learning options. Lastly, it can improve efficiency by automating administrative tasks, allowing educators to focus on more meaningful creative activities.

These benefits extend to both teachers and students. Nevertheless, the efficacy of technology hinges on the readiness of both the hard and soft infrastructure in each country, in addition to the underlying causes of the challenges faced, and the development stage of the domestic education system. Some technology use cases have gained recognition for their effectiveness in diverse contexts and regions, with technology-driven solutions for teacher empowerment standing out as the most prominent one.

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43 K-12 AI curricula: A mapping of government-endorsed AI curricula. [www.unesdoc.unesco.org/ark:/48223/pf0000380602](http://www.unesdoc.unesco.org/ark:/48223/pf0000380602)

44 UNESCO. (2023). Global Education Monitoring Report, 2023: Technology in education: A tool on whose terms? [www.unesdoc.unesco.org/ark:/48223/pf0000385723\\_eng](http://www.unesdoc.unesco.org/ark:/48223/pf0000385723_eng)

## Lessons from the technology-enabled education reforms in Singapore and Estonia

Singapore and Estonia are regarded as global leaders in education, with their students achieving top scores in PISA across all three domains of assessment (mathematics, science, and reading). Both countries have successfully implemented technology-enabled education reforms by following a well-planned timeline. They started by using technology to enhance teacher competency, and then gradually introduced other technological tools to support student learning. This highlights teacher enablement as a key priority in technology-enabled education reform.








In Singapore, four reform initiatives focused on incorporating technology in education have been introduced since 1997. The first ICT Masterplan targeted teacher capacity building for technology tools and improving the technology infrastructure in schools, so that digital solutions could be incorporated into teaching.<sup>45</sup> Within five years, huge strides were made in school internet access and teacher ICT training. Only after teacher competency was achieved did subsequent reforms focus on building students' ICT competencies.

Similarly, in Estonia, attempts to leverage technology for teaching and learning started in the 1990s. Initial efforts were also concentrated on improving technology infrastructure in schools and empowering teachers with digital skills. The Tiger Leap program, launched in 1996, had two main goals: firstly, to equip all schools with computers and internet access (at a time when digital technology and personal smart devices were much less accessible and limited primarily to personal computers); and secondly, to provide training courses for teachers on computer skills, electronic course materials, online research, and accessing educational resources. Like Singapore, Estonia also prioritized teachers' proficiency in ICT before focusing on developing students' ICT skills.

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<sup>45</sup> [www.headfoundation.org/wp-content/uploads/2020/11/thf-papers\\_Twenty-years-of-thinking-school-learning-nation-vision\\_Reflections-on-singapores-ict-masterplan.pdf](http://www.headfoundation.org/wp-content/uploads/2020/11/thf-papers_Twenty-years-of-thinking-school-learning-nation-vision_Reflections-on-singapores-ict-masterplan.pdf)

**Exhibit 4.1: A model for successful technology-enabled education reform**

	Equity and inclusion	Quality	Efficiency
<b>Singapore:</b> EdTech Plan 2030 <sup>1</sup>	<ul style="list-style-type: none"> <li>• <b>National online learning platform:</b> Self-study resources; formal and informal curriculum content</li> <li>• <b>PLD access for SPED and low-income students:</b> Tailored digital literacy initiatives; retain financial support for PLDs</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Strengthen teachers' EdTech practices:</b> Greater emphasis on e-Pedagogy and the use of EdTech</li> <li>• <b>AI-enabled personalized learning:</b> Customized learning pathways and feedback</li> <li>• <b>Create intelligent, digitally -equipped, multi-functional learning spaces:</b> \$64 million grant for K-12 schools</li> </ul>	<ul style="list-style-type: none"> <li>• <b>AI-enabled short-answer feedback assistant:</b> Streamline teachers' feedback processes for grading and remarks</li> <li>• <b>Collaborative sharing:</b> Adapting lesson resources between subject department to ease lesson preparation load</li> </ul>
<b>Estonia:</b> Lifelong Learning Strategy (2020-2024) <sup>2</sup>	<ul style="list-style-type: none"> <li>• <b>Cloud repository:</b> Accessible digital learning resources (such as e-textbooks) for schools and vocational institutions</li> <li>• <b>Device-specific digital learning environments:</b> Tailored solutions for smartphones, laptops, and tablets</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Digital competency training for teachers:</b> Integrating digital technologies into student learning</li> <li>• <b>Digital competency outcomes in the curriculum:</b> Assessing dimensions such as information literacy, communication, digital content creation, safety, and problem-solving</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Knowledge-sharing between institutions:</b> Support for pilot projects that facilitate e-learning adoption and the sharing of best practices between schools</li> </ul>
<div> <div> A model of comprehensive technology-enabled education reform: </div> <div> <div>  National digital learning platform </div> <div>  Access to devices and resources for disadvantaged groups </div> </div> <div> <div>  Digital competency training for teachers </div> <div>  Personalized learning </div> <div>  Engaging learning environments </div> <div>  Digital competency outcomes in the national curriculum </div> </div> <div>  Sharing of knowledge between educational institutions </div> </div>			

1. [www.moe.gov.sg/education-in-sg/educational-technology-journey/edtech-masterplan](http://www.moe.gov.sg/education-in-sg/educational-technology-journey/edtech-masterplan)

2. [www.kogu.ee/wp-content/uploads/2014/05/Lifelong-Learning.pdf](http://www.kogu.ee/wp-content/uploads/2014/05/Lifelong-Learning.pdf)

Sources: Oliver Wyman analysis, Singapore Ministry of Education, and Republic of Estonia Ministry of Education and Research

**Exhibit 4.1** outlines the key initiatives for driving nation-wide technology-enabled education reforms. It draws lessons from reforms implemented by Singapore and Estonia, which successfully addressed pressing educational challenges with digital solutions. Both countries started by enabling and empowering teachers. Only after this important first step did they gradually leverage technology to drive changes in the broader spectrum of educational activities and settings.

Successful technology-enabled reforms in Singapore and Estonia drove improvements in inclusion, quality and efficiency through a few key initiatives. While developing countries looking to incorporate technology into their education system can use the examples of Singapore and Estonia as references, it is crucial to highlight that each country's trajectory will be different from these case studies, as each country has unique needs and goals.

## **In an opportune time to catch up and align with leading nations, developing countries should lead their own way based on their own contextualized priorities and needs**

There are considerable disparities between developed and developing countries in rolling out education reforms using technological solutions. Comparatively, developed countries have more resources, knowledge, skills, and experience than developing countries.

However, most countries face a similar set of concerns and challenges in designing a technology-enabled education system to prepare students to thrive in today's fast-changing world characterized by globalization, changing demographics, and technological advancements.

Teachers in Indonesia face unique challenges in their profession, including limited resources, large class sizes, cultural diversity, limited training and professional development opportunities, low salaries, and logistical difficulties. These challenges make it difficult for teachers to provide individualized attention, navigate diverse classrooms, stay updated with teaching methodologies, and reach remote areas.








Despite the disparities between developed and developing countries and the unique challenges faced by teachers in Indonesia, there is a shared goal of providing quality education. By addressing these challenges and leveraging technology, countries can work towards creating inclusive and equitable education systems that empower students to succeed in the modern world.

## **Developing nations are seizing the opportunity to catch up and align with leading nations**

Benchmarking against the model of successful technology-enabled reforms observed in more advanced countries, the recent reform initiatives taken by developing countries such as Indonesia and India are moving in the right direction to address pressing educational challenges (see Exhibit 4.2).



**Exhibit 4.2: Developing nations are aligning reforms in the right direction**

	Equity and inclusion	Quality	Efficiency
<b>Key takeaways from developed countries for successful technology-enabled education reform</b>	 National digital learning platform	 Digital competency training for teachers	 Sharing of knowledge between educational institutions
	 Access to devices and resources for disadvantaged groups	 Personalized learning	
		 Engaging learning environments	
		 Digital competency outcomes in the national curriculum	
	▼	▼	▼
<b>Indonesia:</b> MoECRT's technological interventions (2022)	<ul style="list-style-type: none"> <li>• <b>Context-specific strategies for disadvantaged groups:</b> Technological readiness assessments are conducted to ensure interventions are tailored to localized contexts</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Teacher capacity building:</b> The PMM upskills teachers to deliver quality education via self-paced modules aligned with the Kurikulum Merdeka</li> <li>• <b>Engaging learning environments:</b> Ready-to-use modules on the PMM enhance teaching practices to increase engagement</li> <li>• <b>Quality assurance:</b> The Rapor Pendidikan provides an assessment of schools' areas for improvement and achievements, encouraging evidence-based initiatives</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Sharing of knowledge via learning communities:</b> The PMM crowdsources content and webinars among teachers</li> <li>• <b>Integrated financial management systems:</b> ARKAS and SIPLah streamline school budget planning, the disbursement of funds, and procurement processes</li> </ul>
<b>India:</b> National Education Policy (2020) <sup>1</sup>	<ul style="list-style-type: none"> <li>• <b>Context-specific strategies for disadvantaged groups:</b> More technology access to students with special needs; broadcast educational programs on mass media (such as on the television or radio)</li> <li>• <b>National learning platform (DIKSHA):</b> Teaching and learning e-content for schools in all major Indian languages</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Teacher capacity building:</b> Training on integrating technology into the classroom</li> <li>• <b>Engaging learning environments:</b> Development and support of technology tools for better participation and learning outcomes</li> <li>• <b>Quality assurance:</b> Established quality standards and accreditation system for the accountability of all schools</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Sharing of knowledge:</b> Set up of an autonomous body (the National Educational Technology Forum) to consult and share best practices on the use of technology in education</li> </ul>

1. [www.education.gov.in/sites/upload\\_files/mhrd/files/NEP\\_Final\\_English\\_0.pdf](http://www.education.gov.in/sites/upload_files/mhrd/files/NEP_Final_English_0.pdf)



## **While the overall goals for technology-enabled education reforms are aligned, developing nations each face unique challenges and are prioritizing their most urgent needs as the first steps**

Developing countries have varying approaches to implement education reform, with a focus on meeting their specific needs. While expanding internet connectivity is a common goal, countries such as Vietnam aim to achieve this by 2025, while others, such as India and Indonesia, may take longer. Indonesia's strategy is different, in particular. Instead of enhancing connectivity with costly ICT investments, its strategies aim to leverage technology that will mobilize and empower teaching staff and school leaders. By unlocking their potential, the ultimate goal of improvement in students' educational results will be achieved.

Vietnam is prioritizing expanding network connectivity to bridge rural-urban and socio-economic divides. In 2021, eight million households in Vietnam did not have access to fiber-optic cable internet service. With a budget of Vietnamese Dong (VND) 3 trillion (US\$131.54 million), the goal is to provide fiber-optic cable internet service to all households before 2025 followed by enhancing online learning programs nationwide.

India, meanwhile, faces a larger connectivity challenge, with 91% of school-aged children lacking internet connection at home, compared to Vietnam's 38%, according to UNICEF. To address this challenge, education policies have focused on making digital content available at multiple touchpoints through mass media such as television, radio, and community radio. Such moves reduce inequities in access, bridging the learning divide.

Indonesia has chosen a distinctive path, as seen in the preceding chapters. With nearly three million G 1-12 teachers, the country has embraced a unified approach in its educational reform strategy coupled with complementary technological solutions. The trajectory Indonesia has opted for is to develop tools to unlock human potential.

The PMM platform was introduced to ensure that teachers have inclusive access to learning and career development opportunities. This is part of Indonesia's focus on digital initiatives that seek to transform deeply rooted behaviors and mindsets in educators. The country is facilitating and better supporting teachers in the delivery of their teaching and school management tasks, providing them with broader upskilling opportunities and enlightening them with advanced pedagogical concepts and best practices from teachers all over the country. The choices made by Indonesia are clearly demonstrated by the technological solutions rendered in an effort to support teachers and schools. To simplify administrative duties and allow teachers to have more time to upskill and be creative, Indonesia has introduced school resource management platforms, namely, ARKAS and SIPLah. The school scorecard platform, Rapor Pendidikan, was introduced to provide diagnoses and insights that aid the planning and prioritizing by school leaders, as well as to trigger a concrete improvement action.

The design and implementation of technological tools should be tailored to country-specific socio-cultural contexts, too. Indonesian society has a strong cultural emphasis on community. Therefore, digital tools designed to upskill educators may include features to encourage community knowledge sharing, instead of solely pushing for personal improvement.

**Indonesia is well-positioned with a head start in the right direction. Consistent efforts will allow preliminary positive results to solidify in the long run. Its pioneering initiatives are already yielding promising results that are poised to bring about lasting change in the long run**

Indonesia has faced significant challenges in its education system, but the country has made commendable progress in rolling out technology-enabled education reforms. Chapters 1 and 2 provided valuable insights into the country's latest efforts.

Chapter 1 highlighted the urgency of improving Indonesia's educational landscape. The government recognizes technology as a pivotal enabler to expedite educational reforms and has allocated a substantial budget of IDR17 trillion for spending on ICT products in the education sector until 2023.

Chapter 2 delved deeper into the technological interventions that have sparked changes in the country's K-12 education system. Those interventions have been designed with a user-centric approach in mind, giving careful consideration to the country's technological readiness. The introduction of an integrated technology ecosystem by the MoECRT has played a crucial role in empowering teachers to be effective role models for their students, and principals to be instructional leaders.

Chapter 3 highlighted the results and transformative impact of Platform Merdeka Mengajar, Rapor Pendidikan, ARKAS, and SIPLah, as well as the MoECRT's laptop distribution initiative. All the tools have been well-received by end-users across all regions, including rural areas, and their perceived value is highly aligned with their intended immediate purposes.

## **The next step is to solidify an irreversible and sustainable transformation among educational stakeholders, ultimately leading to an enhancement in the quality of education in Indonesia**

Building on immediate achievements, Indonesia's primary focus is on ensuring the long-term sustainability and irreversibility of these positive changes. The objective is to deeply embed these advancements within the education system, fostering lasting shifts in behavior and mindset. The MoECRT envisions a future where the positive impact of these interventions becomes an integral and enduring part of the country's educational landscape. In pursuit of the desired long-term outcomes, the MoECRT has strategically incorporated technology into its forward-looking strategic plan.

The visions and expectations of the Platform Merdeka Mengajar (PMM), for example, are diverse and go beyond traditional measures of educational success. The primary objective is to foster a culture of lifelong learning among teachers and principals, creating an inclusive environment that enables the continuous upskilling of their competencies and a greater emphasis on delivering quality teaching and learning with efficiency. By achieving this, it is anticipated that teachers will become more student-centric, open to fostering creativity, and have a passion for learning.

This approach aims to cultivate a strong sense of community and embed the values of "*gotong royong*" or mutual cooperation among educators. Another crucial goal is to empower teachers to shape the students' "noble and civic characters". These outcomes are expected to have a positive impact on student learning, promoting critical thinking and encouraging the creative application of knowledge in various scenarios. This approach also aims to nurture well-rounded individuals, preventing issues such as bullying, and promoting qualities such as self-improvement and growth while ensuring efficiency in the educational process.

The usage of PMM will also extend beyond a learning and sharing platform. It plans to offer a holistic talent management system to facilitate career acceleration based on individual performance and talents, providing a structured framework for objective recognition and advancement. It is employed to identify prospective teachers, assess their potential, and ensure appropriate placements or rewards and recognition.

Lastly, PMM will help teachers reflect on their capabilities and provides personalized training to address each individual's needs. By aligning teacher goals with school assessment results, the system also assists in setting teacher's focus where they are most needed. The talent management ecosystem in PMM will be a key enabler in fostering teachers dedication to continual improvement and focus on delivering quality education to students across the country.

The **Rapor Pendidikan** envisions a transformative shift in the traditional mindset and behavior of school planning. It places a strong emphasis on data-driven and evidence-based approaches to ensure inclusive, quality, and efficient education. The platform is designed with the primary objective of providing comprehensive data that serves as a catalyst for real, actionable improvement within educational settings.

It is anticipated that this data will not only prompt tangible steps towards enhancing educational practices but also stimulate meaningful and constructive dialogue among various stakeholders. These dialogues are intended to engage both the internal school community, including teachers and administrators, as well as the external community, such as parents and guardians, with whom principals and teachers can align on expectations and collaborate to identify the best ways for students to develop.

By facilitating open and collaborative discussions, the platform aims to foster a shared understanding of the challenges and opportunities within the educational ecosystem, ultimately leading to collective efforts in driving positive change and promoting the overall well-being and success of students. This data-driven approach is anticipated to seamlessly integrate into the process of school planning and budgeting, facilitating a contextualized understanding among schools and the local government authorities responsible for approving the schools' plans.

**By incorporating data-driven insights, schools and local government entities can gain a comprehensive understanding of their unique regional characteristics, enabling them to make informed decisions that align with the specific needs and priorities of their respective communities. The long-term vision of the Rapor Pendidikan is rooted in fostering a sustainable culture of informed decision-making, where the power of data serves as the fuel of positive transformation at every level of the educational ecosystem, ensuring inclusive, quality, and efficient education for all students**

Lastly, the **ARKAS** and **SIPLah** platforms were developed to enhance the operational efficiency within educational units. The core objective is to leverage BOS fund planning as a strategic lever, driving improvements in the quality of educational units and fostering enhanced student competency. Additionally, the platforms aim to inclusively empower both new and existing treasurers or operators, enabling them to independently execute planning and reporting activities while adhering to regulations. By streamlining administrative and audit processes, ARKAS and SIPLah seeks to redirect the focus of educational personnels including principals, teachers, treasurers, and operators, towards the primary goal of enhancing student competency.

The ARKAS platform aims to establish its archives as a reliable and dynamic tool that is capable of capturing essential data, facilitating informed decision-making and contributing to the overarching objective of creating a more efficient and student-centric administrative environment for education. SIPLah is an online marketplace approved by the Ministry, connecting educational units with approved vendors to facilitate an efficient and trusted digital procurement of goods and services. Through these outcomes, ARKAS and SIPLah envisions a sustained impact on the education ecosystem, emphasizing more efficiency, holistic improvement, and strategic planning for long-term success.

In the near future, the MoECRT envisions transforming the PMM into a self-contained ecosystem that seamlessly integrates with the career progression and competency development journey of teachers. The MoECRT is also planning to introduce a new feature called Manajemen Talenta (talent management), which aims to create a comprehensive talent management system that resides inside PMM. This system will provide better performance tracking throughout the entire lifecycle of being a teacher, including the pre-service period when they are newly appointed, the in-service stage when they are actively teaching, and the post-service phase when they are preparing to retire. During the in-service stage, the system will closely monitor the teachers' competencies in order to assist and support their career advancement and overall well-being.

**By introducing this feature, the PMM will further upgrade itself as a super-app for teachers, covering all the necessary aspects such as enablement, performance tracking, and career development.**



**Our analysis of the recent Merdeka Belajar movements in Indonesia's educational landscape reveals a promising trajectory characterized by commendable progress and strategic initiatives, indicating that Indonesia is heading towards systemic transformation for the better**

From the tactical move to adopt technology as accelerators to roll out reform at the nationwide level to the execution model in which the MoECRT collaborates with the technology team, the delivery of the technology impact excels beyond providing instruments required for strategy implementation.

The approaches to navigating the complexities of educational reforms have yielded immediate positive changes and established a strong foundation for future advancements. These observed changes, including cultural and behavioral transformations, indicate that the educational system is not only well-positioned but has also made significant strides. Prominent and even unprecedented shifts have been observed in the behaviors and mindsets of all the key education actors, encompassing education governance bodies in their approach to policy implementations, teachers in their commitment to upskilling and innovative teaching practices, and schools in their process of reflection and informed decision-making.

When compared to more advanced nations, the directionality of these changes become even more apparent, highlighting Indonesia's targeted approach in addressing root causes and demonstrating a robust commitment to transformative change. Indonesia is heading in the right direction and is also poised to drive further advancements in its continuous pursuit of educational excellence. Initiatives such as enhancements in curriculum and teacher training enabled by technological forces exemplify a comprehensive approach to addressing the multifaceted challenges in the education sector.

This transformative journey serves as a testament to Indonesia's dedication to fostering a robust foundation to nurture talents and prepare youngsters to become lifelong learners, improve their competitiveness for career success, and become dynamic contributors for societal development.



**As the country embarks on this inspirational journey, the importance of sustained efforts and consistency cannot be overstated in achieving educational transformation**

It has been evidenced by the experiences of other countries that positive shifts often require an extended period to solidify. In the late 1970s, Finland embarked on a revitalization plan with the introduction of a new curriculum, and empowerment of teacher training and career development. It took more than two decades to enhance the foundational capabilities of school system units across the country. In the 1990s, a new curriculum reform was initiated again, laying the foundation for the globally acclaimed quality of basic education that Finland enjoys today. The substantial improvement in the social prestige of teachers also took more than a decade to materialize.

With the progress of time and technology, this process may accelerate. Since 1990, Estonia initiated various reforms in the public sector, including education, and concurrently launched technology-enabled education plans. The transformation began by improving teacher remuneration and attractiveness of this profession, and providing a competitive teacher career development and training system, so as to reverse the shortage of teacher talent, a predicament that haunted Estonia even until 2000. Almost 30 years later, by 2021, Estonia surpassed Finland to become the European leader in PISA performance.

Replicating the success of small countries in larger nations comes with new challenges and more resistance. And no one should underestimate the timeframe needed for change, even in a more technology-available age than 30 years ago.

It is crucial to acknowledge that moving in the right direction entails more than immediate change; it requires patience and perseverance. The transformative journey entails a nuanced process of shifting the culture and mindset, not only within the central government, but also among the vanguard of Indonesia's education system, including teachers, school principals, and local government entities. This necessitates ongoing and consistent efforts to facilitate their adaptation to new paradigms and ensure the realization of irreversible change. The positive shifts observed in the educational landscape reflect not only changes in policies, but also in the very culture and mindset that drive education in the country.

**As Indonesia continues on this transformative path through the Merdeka Belajar movement, propelled by the appropriate adoption of technology, it is not merely making progress but driving an unstoppable acceleration in the right direction. The whole ecosystem will be motivated, in a concerted manner, to actively lay the foundation for a future in which educational excellence becomes the norm rather than the exception, ensuring a culture and mindset that values knowledge, and pursues innovation and excellence for generations to come.**



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