

# Digital School in Indonesia: An Illustration of Harnessing Digital Technology in Facilitating Learning Environment

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## KEYWORDS

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## ABSTRACT

Technology has become an important element in the education, current educational policies are aimed at mastering technology. This has an impact on learning, requiring the use of tools or digitalization for the learning process. This article contains literacy studies from the policies of the Ministry of Education, Research and Technology of the Republic of Indonesia, previous research and various current articles regarding digital education. The purpose of this article is to explore the reasons for increasing technology-based learning and the impact on learning based on political perspectives, educational culture and social insight. Based on the results of the literacy study, it can be concluded: (1) Indonesian education reform through digital education is due to imitation of international educational practices that are considered the best and are in global demand; (2) changes in the educational environment change the learning culture and teacher workload; (3) teacher and student skills will change starting from pedagogical skills, social interaction and communication; (4) the consequences of this policy require the government to prepare adequate infrastructure.

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## Introduction

Across many regions and settings, digital technology is becoming a prominent element of education provision and practised. The ubiquity of smartphones, tablets, internet usage and other types of computers are popular daily devices in a large percentage of the population worldwide. Governments in almost all countries worldwide have now formulated policy agendas to encourage and enable the use of emerging technology in classrooms, schools, and universities. In particular, the Indonesian Ministry of Education and Culture (MOEC) collaborated with the Ministry of Communication and Information Technology of Indonesia to design a Digital School Program in the Indonesian educational landscape (SMK Kemdikbud, 2019). Digital school is an Indonesian national program to harness digital technologies in the educational landscape by giving facilities such as laptops, projectors and information and communication technology (ICT) devices to the teachers and students (MOEC, 2019). In particular, the school in the frontier, outermost, and disadvantaged areas will be prioritised to receive assistance and those facilities (SMK Kemdikbud, 2019). This means that the Indonesian government prepared a prodigious national budget to facilitate teaching and learning to be more inclusive and accessible by integrating educational technologies.

In 2019, this program provided 37,3 thousand servers to school and 1,7 million mobile technologies (tablets and laptops) to students, incorporating electronic books and educational content accessible online and offline (Bona, 2019). Moreover, Kasih (2020) explained that MOEC Indonesia allocated a national budget of up to 15 trillion rupiahs (equivalent to 750 million pound sterling) until 2024 to digitalised schools in Indonesia through public tendering procedures. As a result, the minister of MOEC Indonesia postulated that school digitalisation would insert an acceleration for education betterment, including a digital curriculum, a learning platform for teacher and students that implicate personalised, effectiveness, and efficiency in the education sector (Makdori Yopi, 2020).

Implementing digital school in Indonesia is one of the educational policies to keep up with global changes. Indonesia government referred to Sustainable Development Goals in the World Education Forum 2015 as an educational road map to promote and enhance education quality (Paska Kemdikbud, 2018). In 2030, Indonesia expects to conduct inclusive education in primary and secondary students without anyone left behind. To achieve this aim, the President of Indonesia, Joko Widodo, appointed Nadiem Makarim's position as minister for MOEC Indonesia in 2019, which created high expectation, optimism and apprehension about the possibility of an innovative solution for the long-awaited education reform (Yunus Syarif, 2019). As the former CEO of Gojek, the ride-hailing application, Nadiem's arousal focused on preparing Indonesian human capital in the future economy through technological determinism (Yunus Syarif, 2019). Further utilisation of innovations in the next five years with techno-solutionist will undoubtedly be one of Nadiem's key tactics.

Nadiem's political stance always claimed that countries are in global competition (Kumbaran, 2021); then, it is crucial to comprehend the imperatives seen to drive those changes. Therefore, many prospective career paths and opportunities for the current generation are still to be created in the future (Herman, 1999). It is pivotal, then, educating our children to be more adaptable, having a sense of ground-breaking and resilience. Conversely, many teachers report that their students are not embroiled with educational content and that school is crumbling to prepare students for what lies ahead in the 21st-century world (Cooper et al., 2012). Research conducted by Buckingham (2013) appears to indicate that, for a significant proportion of digital technology, mobile technology is a widely recognised driving force of social affordances and economic transformation and an integrated instrument to cultivate an upskilling workforce of the future. Together with these mean, Indonesia's ministry of education and culture under Nadiem's management promoted the digital school to adhere to global demand.

## **Method**

Based on the current issues in Indonesia, this paper will illustrate the primary justification for raising educational technologies' utilisation, the considered variables in adopting the program, and maximising it. Secondly, this paper will extend the examples of some significant impacts on digital school implementation in the learning environment from political view (foreign intervention), educational culture (external and internal imperative) and social insight (teacher and students' abilities).

## **Result and Discussion**

Technology based education is considered as a generic and solutive formula to enhance the quality of education. Many studies have shown that countries are mimicking the educational policies of one another in international perspectives (Selwyn, 2008; Selwyn, 2012; Koyama, 2017). In the past thirty years, educational technology's uneven advancement has been part of globalisation that now seems homogeneous worldwide (Selwyn, 2012). The nation-states strive to normalise the economic and societal framing linked with globalisation and tempting to picture the educational technology policy as forming a global phenomenon (Koyama, 2017). This phenomenon, explained by DiMaggio and Powell (1983) as mimetic isomorphism, an organisational move to follow the most successful, influential, and reputable educational policies, responds to global competition. Furthermore, the existence of the internet empowers

the technologies to speed up cross border movement (Appadurai, 1990). In late 1990, educational technology was imposed as an essential entity in government attempts to resolve accessibility problems, especially for underprivileged and other marginalised communities (Selwyn, 2012). For example, in the last thirty decades, the United States and the United Kingdom's reform programmes have mirrored long-standing questions about the use of education as a way to counteract 'digital divides'. Early US policies spoke of a will to "mitigate the most challenging social turmoil" (United States Office of Educational Technology, 1996). As UK lawmakers claimed over fifteen years later, technology's educational use is a noteworthy poverty reduction tool (Selwyn, 2008). Similarly, the Singaporean obsession with "offering citizens a digital future" would also represent a similar sentiment (Birger et al., 2008). These global aspects clearly play a role in influencing countries to learn and follow the best practices of implementing educational technology policies in other regions, explaining why Indonesia is following their steps.

Analysing the external imperatives of mimicking international policies, information society and knowledge economy as global trending, we need to reflect on the Indonesian context. The digital school promises many beneficial improvements, but we need to transform teachers' quality and students' learning activities as a fundamental approach. Selwyn (2016) urges that digital innovation in education will be meaningless and deceived unless there is no strong political will to redesign the school system, such as teacher quality, formal learning institutions, and student engagement. Notably, the school is identical to its traditional, bureaucratic, and uncompromising learning atmosphere, which often prevents students from pursuing their interests and skills. Students must follow the strict curriculum and subjects whilst they seldom study. The method of learning and teaching is obsolete and overlooks students' diversity. So, is a digital school program able to reform the educational system?

As discussed above, the existence of technology in the education world is justified based on imperatives politically. Selwyn (2016) categorised the imperatives into the external and the internal. External imperatives can also be viewed as external forces in the educational realm. This shifting stems from the perspective that educational providers lag behind other sectors in terms of technological advancements (Sears, 2003). In this regard, industry and business view schooling as a means to support their aims. Since the permeation of technology is becoming omnipresent in an increasing number of jobs, educational institutions fail to give their students the skills they need. This is linked to the notion that the educational system needs to keep up to date on the integrated technology advancement in economic and societal changes. The rise of social media in students, for example, occurs without school interventions since students can grasp and use it efficiently (Mahiri, 2011). Whilst in employment, the world perceives massive school quitters as lacking other high-demand digital skills, such as software and program development (Lamb, 1985). Nevertheless, this has been a grievance for over years and generations. The notion of using emerging technology in the educational sector underpins the digital era, information society, and knowledge economy as a provided solution. The rise of the information society (Machlup, 1962) and the knowledge economy (Drucker, 2011) are increasingly popular in knowledge-intensive practises that lead to significant technological development such as the smartphone industry. The phenomenon becomes good or service trading in line with customers' demands. As a commodity, the ability to utilise digital technology is more demanding, especially in the workplace. As a result, those who have digital knowledge

and skills defined as innovation and economic value, which equals a new power. Thus, the digital school in Indonesia may expect to have a new power of Indonesian in the international perspective.

Aforecited questions are linked with the questions of authority/power, such as who is the most profitable form and in the interest of educational technology. In dissecting the digital school program, we must play in helicopters and a rational view of the promises and educational technology field experiences. Therefore, an analysis that is not overly festive nor excessively cynical should be upheld. At all, it is anticipated to become one with unequal use and unexpected effects in the 'global story' of educational technology. If the external imperatives force an outsider to utilise digital technologies, then the internal imperatives cover the internal demand to strengthen their quality. From time to time, the educational system changes educational culture to attune to the new situation, especially the students' characteristics. With the #MerdekaBelajar (#freedomtolearn) initiatives by MOEC Indonesia, teachers should listen to and understand students' characteristics (MOEC, 2019). Flashback with teaching style development, Skinner (1961) argued that behaviourism was highly influential on delivery pedagogy content through classical and operant conditioning in the late 1950s. As the passive recipient, students were expected to receive diverse stimuli through drilling and practices (Skinner, 1961). This era is associated with "pre-digital" technology use; for instance (Kalogiannakis et al., 2018) invented the teaching machine, which focuses more on "technical fix" to bear left-behind students (Skinner, 1965). The recent learning theories provide many rooms to explore students' capacity, demand and ownership, for example, sociocultural, constructivism and constructionism (Robins, 1989). As a result, learning activities define beyond the transfer of knowledge from the teacher module to students' books (Forte & Bruckman, 2007), while seeing learning as the construction of understanding through analysing and addressing the crucial issue (Jonassen et al., 1995). Therefore, the digital school might attempt to change pedagogical style under technological frameworks to have more agency in constructing their learning path.

The following internal imperative is to accrue educational standards and outcome. For teachers, the digital school will be advantageous in terms of time efficiency in the "non-teaching" task such as administrative and procedural aspects in preparing attendance, assess the multiple-choice manually, and others (Department of Education, 2019). Reducing this administrative culture in school will open more space for teachers in patterning and designing personalised learning for their students. Additionally, the digital school program installed some learning management system (LMS), such as Rumah Belajar (Home Learning) - a LMS made by MOEC Indonesia that helps teachers and schools create online attendance, assessment, and pedagogy content (Yanti et al., 2020). Hence, teachers' shifting culture of procedural in the classroom might appear to reduce teachers' workload. From the student's perspective, the digital school is seen as an essential item in their daily activities and changed the participatory culture in the learning environment. The Global Education Census Cambridge (2018) surveyed that

Indonesian students in IT suites or computer rooms are the best in the world. They are now having the second-largest personal machine (54%), just behind the United States. More than three-quarters (67%) of Indonesian students utilise smartphones in their classroom space while using them more in the academic assignment (81%). Indicating active participation for a significant proportion of students in Indonesia will shift the learning culture in the classroom. By facilitating digital technology to students, the digital school provides virtual community tools as a participatory mindset in improving learning methods, student attainment and engagement. In particular, Rumah Belajar (LMS MOEC) provides students with access to educational content and explores and investigates their curiosity by learning analytic, data-driven pedagogic (Yanti et al., 2020). Consequently, having a full autonomy right in deciding their choices is the demand of 21st-century skills (Jewitt et al., 2011). Conversely, traditional teaching requires face to face meeting and procedural steps, which lessen students' autonomy and flexibility. So, it is evident that teachers and students may change their teaching and learning culture in enhancing educational standard and outcome, specifically in effectivity, efficiency, and flexibility.

Turning now to the importance of school digitalisation has led to changing the paradigm of the classroom. The education will be seen as "beyond the four walls of the classroom" (Gee, 2005). Mainly, integrating the Rumah Belajar Application is a decisive shift in traditional teaching culture to provide space for virtual learning whenever and wherever (Yanti et al., 2020). Historically speaking, the educational system's shifting has existed from handling physical materials (books and notes) to electronic resources. During the Covid-19 pandemic, the phrase of flip learning has been rising in virtual classrooms where the notion of assimilation and meaning-making are paramount instead of information transmission (Lage et al., 2000). Using digital technologies in classroom settings will be a potential benefit to aim, as it is a multifaceted, diverse array of information in multimedia alternatives (MOEC, 2019). Rumah Belajar (LMS MOEC Indonesia) provides a series of resources such as interactive video, audio, educational games, assessment, virtual laboratory, and forum discussion (Yanti et al., 2020). In this virtual world, students can have affinity space (Gee, 2005). They can connect and collaborate with their peers in versatile mode. Ironically, this phenomenon might lead to disconnecting students in the physical world (Siemens, 2005). All the shortcuts will no longer require physical contact, extended that the digital age shifted the way society habituated and communicated. In the end, the teachers' pedagogy skills are required to set up digital wisdom in an educational culture shifting.

Another internal imperative brings us more access. The advent of digital access will be demanding in terms of infrastructure and facility (internet access, connectivity, digital tools). Educational mobility is growing to open a more inclusive ticket for the privileged community and underprivileged ones (Damarin, 2000), explaining why schooling is not the only option to acquire knowledge; students have alternative methods by watching Youtube, blogs, websites

based on their interest. From the global perspective, The Hole in the Wall Project is an exemplary idea to cater digital literacy for local people in India. This approach vegetates children in India to elicit basic computing abilities (Mitra, 2003). Similarly, in the Indonesian context, current local educational start-ups such as Skill Academy, RuangGuru, Zenius promoted online and distance learning from private parties (Freischlad Nadine, 2016). At the same time, the Indonesian government is currently establishing the Palapa Ring project to provide more access. Berita Satu (2019) quoted Jokowi, The President of Indonesia, who launched the high-speed internet (Palapa Ring) that connects 514 regency and cities across Indonesia. The fibre-optic network that cost 7.63 trillion rupiahs (381.72 million pound sterling) will reach out to the poorest regions in the county's east through land and undersea (Reuters, 2019). Therefore, the connectivity issue to bring internet access, especially infrastructure in rural areas, is updating under government projects as well.

The justification, as mentioned earlier, is highly optimistic about how digital school works well to embrace students' diversity, intensify personalisation and provide inclusive education based on students' interest and necessity. Notwithstanding, it has two major concerns - the role of teacher and students in building a positive relationship to technological adaptation and whether teacher and institution preparedness can cope with potential challenges. The next question to illustrate the digital school implementation will be what is the role of individual learners and educators in the digital school?

The definite diagnosis is the grassroots response to social insight on teachers' knowledge and students' behaviour. Many studies have delineated the generational gap in harnessing digital technologies. Today's students and their predecessors socially have different approaches and ways of thinking. To classify this generation, Prensky (2001) coined digital natives and digital immigrants. The determinant indicator is the way people behave; most current educators are digital immigrants tending to read in hardcopy whilst their students are happy with onscreen documents. Besides, an immigrant can solely focus on one thing, but natives are naturally capable of accustoming to multitasking (Prensky, 2001). Moreover, natives are labelled as active users (Brown, 2000; Frand, 2000) that spend most of their time in digital devices, establishing a gap with immigrants who are not engaging actively. Other scholars found that today's learners are not merely expert in harnessing digital technology integration (White & Le Cornu, 2011; Southall, 2012). Prensky's dividing line encourages a solid technological determinism claim that obfuscates individuals' essence in utilising educational technologies. They also appear to classify the user's age instead of more focused on the aim of the usage itself. White & Le Cornu (2011) challenged Prensky's dimensions with a two-dimensional approach based on personal and institutional use. Then, he labelled it with resident and visitor purposes. A digital resident is the one who actively engages with the application, for example, contributing to posting ideas, comments and sharing whilst the visitor just only utilises it without further activities. Thus, the generational gap in the digital world suggests more fluidity based on the usage of digital technologies. As a result, teachers may be residents and visitors to keep up with students' ability. The significant issue will be to what extent, how are the students' generation able to

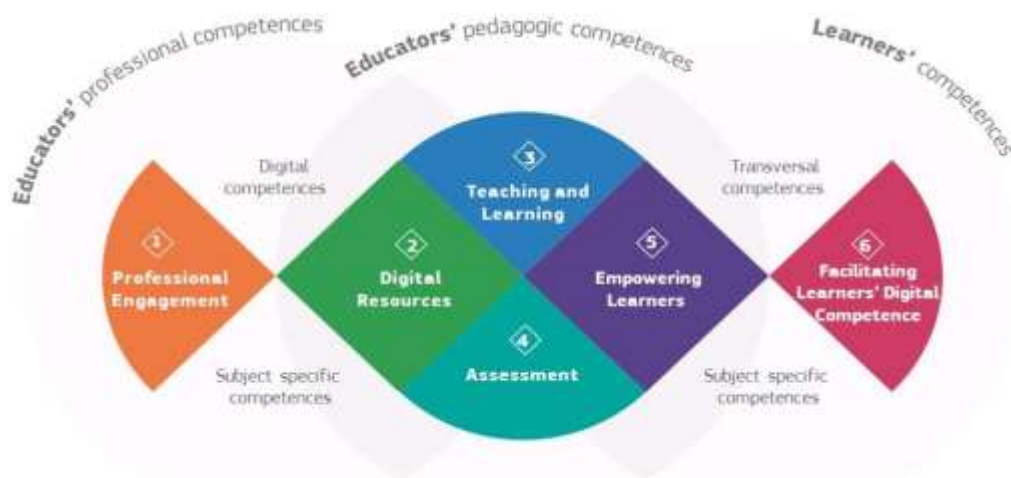
utilise mobilelearning wisely and make the right decision to improve their learning activities?. This issue should be addressed not only for internal factors of students but also teachers' ability to design mobile learning as external forces meticulously.

In a learning environment, digital technologies may administer and orchestrate a new learning atmosphere for related stakeholders. One prerequisite ability to maximise the digital school program is digital literacy. As literacy in the digital age, digital literacy is an ability to retain information from any digital resources (Gilster & Gilster, 1997), comprehend, analyse, and evaluate online sources, then recreate them into yours (Buckingham, 2013). In our technologically driven society, digital literacy is a crucial indicator to embrace the learning environment significantly. However, IMD World Competitiveness Centre reported that Indonesia ranked 56 out of 63 countries on digital competitiveness by assessing knowledge, technology, and future-readiness to adapt and expose digital technology for social transformation (Gee, 2005). This means that Indonesia is facing many challenges in implementing technological solutions. At the same time, East Venture stated that the Covid-19 pandemic coerces Indonesia to digital transformation by adopting an internet penetration rate of up to 75% across 34 provinces and 25 major cities (Cordon, 2021). Serendipitously, this report happened as an opportunity to support the digital school program, especially the post-covid world where people tend to have great exposure to digital learning and technological skills. By implementing digital school, we assume that technological facilities, resources, and access are already established and exist whilst the Indonesian government has to ensure and work hand in hand to amplify digital literacy in an educational setting.

To maximise digital school implementation, the Indonesian government should reflect the digital literacy framework as an enabler in achieving the promise of digitalisation in education. UNESCO enables countries to assess, monitor and develop their digital skills and capacities through Digital Literacy Global Framework (UNESCO, 2018). This includes understanding hardware and software, information data literacy, communication and collaboration skills, digital production, online safety, problem-solving approach, and prospective career competence. Furthermore, the Department of Education United Kingdom (2018) embedded five classifications of vital ability to survive in the digital world from communication, investigating the content, online transaction, problem-solving approach, and being securely and legally doing online. In the UK national curriculum, computing skill directs students to establish comprehension in applying the key principles of computer science, elaborate the problem in computational terms, evaluate along with helpful information technology and be responsible as a user (Department of Education, 2019). Meanwhile, the Indonesian government facilitates digital technologies by sending the facilities and preparing teachers and students in the digital literacy framework. In the status quo, a national curriculum in Indonesia has computer science for high school students. A researcher from the Centre for Indonesian Policy Studies (CIPS) wrote that Indonesian schools are not concerned with computational thinking and acquiring information from the digital world wisely, effectively, and critically (CIPS Indonesia, 2021). Additionally, Indonesian child protection also urged the national government to integrate digital literacy into the national curriculum to protect children's rights (Larasati Citra, 2021). Therefore, there is an urgency to work in the digital literacy framework, which contextualises the Indonesian issue to ensure the digital school project's best outcome.



For the educator, digital literacy means having professional and pedagogies competencies in digital skills. Yunus (2017) criticised the Indonesian teachers' competencies based on national teacher evaluation, which portrayed that our national average was 44,5 in 2015. He mentioned that MOEC Indonesia required a teacher with 75 on average by giving many training and supervision in professional career development; meanwhile, the government should embrace a growth mindset. Teachers need to be adaptable and applicable in facilitating a learning atmosphere. Amidst the pandemic, some innovative regulation by the Indonesian government ameliorated the digital literacy journey. Let us monitor and illustrate how MOEC Indonesia implemented them through European Union published The Digital Competence Framework for Educators (DigComEdu) with six areas.



**Figure 1**  
**Illustration of educator' s competency**

The picture is shown in the overlapping areas to bolster educators in maximising the potential of technology in the education realm (Carretero et al., 2017). The first area is that the educator can harness digital technologies for communication, collaboration, and professional development. In the Indonesian context, Guru Belajar & Berbagi (Teacher Learn & Share) teacher web-based training, an innovative online platform from MOEC, provided a series of teacher training and best practices ranging from online teaching, shared lesson plan, interactive video, and webinar (Guru Belajar dan Berbagi, 2020). More than 900.000 users actively engaged and contributed through this platform (Guru Belajar dan Berbagi, 2020); however, it is less than one-third of the total number of teachers, which is more than four million. This initiation should be appreciated, but at the same time, the government must propel and work harder to cover other remote teachers inclusively.

The second area is to source, create and share digital resources, and the third one focuses on utilising amidst teaching and learning. MOEC Indonesia constructed Rumah Belajar (Home Learning LMS) related to both areas by providing teaching video, materials, and educational games. From my personal experiences, my students are less likely to engage with provided



material in Rumah Belajar because it is slightly dull and not challenging. The LMS may rectify its performance by conducting placement tests first so that students are placed based on their capacity, which implies the system will be more adaptable. A placement test is a crucial element to identify who most need study skills classes (Wall et al., 1994), in addition to stepping into technological frameworks that make it possible to design local placement contexts. This placement design will help educational institutions determine students' ability in a contextual perspective and then develop, administer, and evaluate learning engagement (Ockey et al., 2020). Another significant issue is students tend to skip the teaching video. We need to reform the content delivery concept by formatting interactive and high-quality video incorporated with in-questions video. Creating active elements such as questions in the middle of the video, polls, interactive conclusions, and others will be beneficial to append students' engagement, participation, response and thinking abilities (Priyakanth et al., 2021). In particular, the interactive video would be activated to raise students' awareness of the educational video (Kolås, 2015). This system will diminish the skip-video style and lead to more digital engagement from students.

The fourth emphasises enhancing assessment strategies. Here, the current educational policy regulated a new form of national assessment under minimum competency assessment and character survey. By harnessing technological elements, multistage adaptive tests (MSATs), MOEC Indonesia designed national evaluation as a baseline and mapping out the students' ability, teachers' capacity and school environment as constructive feedback and improvement (The Jakarta Post, 2019). MSATs applies an algorithm that suits the test takers' estimated ability level, where the adjustment is measured in real-time during the test (Kentaro Yamamoto et al., 2019). This digital test approach was following the PISA testing design trend as well, where Indonesia aspires to keep up its rank on literacy, science, and numeracy. On PISA results 2018, Indonesian students' performance ranked 72 out of 78 countries (OECD, 2018). Familiarising the test design with students and teachers, MOEC Indonesia expects to have betterment in the following PISA result.

The following areas facilitate learners' empowerment through inclusion, personalisation, and active engagement. This is a crucial parameter of whether utilising digital technologies in the classroom setting is for consuming and producing and solving a contextual problem. If the educators are competent, it will implicate learners in harnessing digital technologies creatively and responsibly. Remarkably, the Indonesian government should raise educators' awareness regarding the complexity of utilising digital technologies to make pedagogically meaningful and safe use for the learning environment. Thus far, the teachers' digital literacy based on six areas of Digital Competence Framework for Educators is progressing and improving through many initiatives from the Indonesian government. MOEC has been establishing the align projects to

raise teachers' competency in professional development, teaching method, assessment, and the ability to guide students in the technological realm.

For students' notion, the digital school also arguably affects thinking and behaviour in facilitating a learning environment. Charlton (2007) suggests that students should have learned three essential skills to cope with and appreciate digital media content: 1) communicative, 2) intellectual, and 3) emotional skill. For him, communicative capacity is the ability to interact symbolically; cognitive based means the capability to grasp the significance of substances; emotional skill can select subjects of concern and handle challenges. According to Piaget's cognitive development theory (2007), students, especially at the primary level (K-12), are actively growing their intellect through current cognitive schemas and their environmental performance, interpretation, and management, as well as the development of new cognitive constructs when they are tackled with new environmental characteristics. Those statements referred to the transition that would affect students in shifting from a traditional learning environment to digital learning.

Many studies explored the dark side of digital technologies in the educational landscape. In communication, students may lose their capacity to communicate face to face because they speak in texting and messaging (Cowan et al., 1969). He also mentioned privacy for posting personal information and hoax information which leads against the value of education. In the cognitive aspect, Greenfield claimed this students' generation in the mid- 21st century might have a short attention span (Siddiqui & Singh, 2016). This is subjected to technological tools that 'deskilling' of students does traditional skills and literacies, such as writing with a pen, reading a hardcover book. Keen (Furdyk & Walraven, 2009) mentioned these students as a generation of cut-and-paste whilst Bauerlein (2011) called them the 'dumbest' generation. In addition, the effect of digital technology on the emotional well-being of children is increasing, especially in terms of fear, anxiety, and depression. Investigative topics encompass anxiety and reduced actions associated with a technology-based negative social contrast, stress due to loss of emotional regulatory skills due to the replacement of digital media, fear about being inadequately linked and anxiety, depressed social contact triggered by digital media substituted (2009). Along with the provided benefits, these risks should be managed and anticipated well by the government and related stakeholders.

Some strategies must be implemented simultaneously in the implementation of digital school. From the 'Better Internet for Kids' Project and 'European Strategy for a Better Internet for Children' (2012), Indonesia can learn to raise awareness and digital wisdom amongst children regarding harmful online content, foster digital literacy skills, empower children as they explore the digital world and teach about online safety (Hoge et al., 2017). Understanding digital wisdom would be decisive in facilitating learning environments. Another piece of advice for educators,

students, and parents to use the TEAM framework: 1) Talk regularly to children about online safety information, 2). Explore the virtual world jointly as a family, 3). Agree on family/community rules about what do's and don'ts whilst online, 4). Manage set of privacy and harness family-friendly features (EUR-Lex, 2018). These strategies might be valuable tools to minimise and diminish the jeopardised effect of digital learning.

## Conclusion

To sum up, the technological pace shifted Indonesian educational policy and reformation abundantly in facilitating the learning environment through digital school programs. The political justifications relied on mimicking international best practices and global demand, which look forward to improving educational standards, shifting the classroom paradigm, and providing more access. Furthermore, the culture-shifting from traditional to digital learning may occur in educational settings from teachers' workload and digital residence to students' participatory culture and virtual environment. This suggests that teachers and students may be changing in terms of pedagogical skills, interaction, and communication. As consequences, MOEC Indonesia should work up, escalate, and create the right sequence to align the expected outcome. From preparing and establishing infrastructure

## References

- Appadurai, A. (1990) Disjuncture and difference in the global cultural economy. *Theory, Culture & Society*, 7 (2-3), 295-310.
- Berita Satu (2019) *Indonesia completes palapa ring internet superhighway*. Available online: <https://jakartaglobe.id/tech/indonesia-completes-palapa-ring-internet-superhighway> [Accessed 22 March 2021].
- Birger, F., Lee, S. K. & Goh, C. B. (2008) *Toward a better future: Education and training foreconomic development in singapore since 1965* World Bank Publications.
- Bona, M. F. (2019) *Kemdikbud targetkan digitalisasi sekolah tuntas 2024* . Available online: <https://www.beritasatu.com/nasional/575930/kemdikbud-targetkan-digitalisasi-sekolah-tuntas-2024> [Accessed 22 March 2021].
- Buckingham, D. (2013) *Beyond technology: Children's learning in the age of digital culture*. John Wiley & Sons.
- Cambridge International (2018) *The 2018 cambridge international global education census*. Available online: <https://www.cambridgeinternational.org/about-us/edcensus/> [Accessed 22 March 2021].
- Carretero, S., Vuorikari, R. and Punie, Y., (2017), *DigComp 2.1: The digital competence framework for citizens with eight proficiency levels and examples of use*. publications office of the european union. Available online: <https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/digcomp-21-digital-competence-framework-citizens-eight-proficiency-levels-and-examples-use> [Accessed: 22 March 2021].
- CIPS Indonesia (2021) *Upaya peningkatan literasi digital perlu terintegrasi dengan kurikulum*. Available online: <https://www.cips-indonesia.org/post/siaran-pers-upaya-peningkatan-literasi-digital-perlu-terintegrasi-dengan-kurikulum> [Accessed 29 March 2021].
- Cordon (2021) *Covid-19 has equalized digital competitiveness across indonesia's provinces, says east ventures report*. Available online: <https://www.techinasia.com/covid19-made-digital-competitiveness-across-indonesias-provinces-equal-says-east-ventures-report> [Accessed 22 March 2021].
- Department of Education (2019) *Realising the potential of technology in education*. Available online: <https://www.gov.uk/government/publications/realising-the-potential-of-technology-in-education>. [Accessed 22 March 2021].
- DiMaggio, P. J. & Powell, W. W. (1983) The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 147-160.

- Freischlad Nadine (2016) *29 edtech startups across southeast asia with some funding and traction*. Available online: <https://www.techinasia.com/26-edtech-startups-southeast-asia> [Accessed 29 March 2021].
- Gee, J. P. (2005) Semiotic social spaces and affinity spaces. *Beyond Communities of Practice Language Power and Social Context*, 214232 .
- Gilster, P. & Glister, P. (1997) *Digital literacy* Wiley Computer Pub. New York
- Guru Belajar dan Berbagi (2020) *Guru belajar dan berbagi*. Available online: <https://gurubelajardanberbagi.kemdikbud.go.id/> [Accessed 22 March 2021].
- Kasih, A. (2020) *Kemendikbud bakal upayakan digitalisasi sekolah pada 2021*. Available online: <https://www.kompas.com/edu/read/2020/10/28/073913971/kemendikbud-bakal-upayakan-digitalisasi-sekolah-pada-2021> [Accessed 22 March 2021].
- Kolås, L. (2015) Application of interactive videos in education. *2015 International Conference on Information Technology Based Higher Education and Training (ITHET)*. IEEE.
- Koyama, J. (2017) Assembling language policy: Challenging standardization and quantification in the education of refugee students in a US school. *Language, Education and Neoliberalism: Critical Studies in Sociolinguistics*. Bristol, England: Multilingual Matters, 163-183.
- Kumparan (2021) *Nadiem makarim ajak industri berkolaborasi dengan dunia pendidikan*. Available online: <https://kumparan.com/kumparanbisnis/nadiem-makarim-ajak-industri-berkolaborasi-dengan-dunia-pendidikan-1vR2aEMw47J> [Accessed 29 March 2021].
- Lamb, J. (1985) Programming the first generation. *New Scientist*, 105 34-37.
- Makdori Yopi (2020) *Kemendikbud akan digitalisasi sekolah mulai 2021*. Available online: <https://www.merdeka.com/peristiwa/kemendikbud-akan-digitalisasi-sekolah-mulai-2021.html> [Accessed 22 March 2021].
- MOEC (2019) *Digitalisasi sekolah*. Available online: <http://smk.kemdikbud.go.id/konten/4515/digitalisasi-sekolah> [Accessed 22 March 2021].
- Ockey, G. J., Vo, S. & Baghestani, S. (2020) Establishing appropriate cut scores of a standardized test for a local placement context. *TESOL Quarterly*, .
- Paska Kemdikbud (2018) *Generasi emas indonesia 2045*. Available online: <https://paska.kemdikbud.go.id/wp-content/uploads/2018/08/170822-V.2-Generasi-Emas-2045.pdf> [Accessed 22 March 2021].
- Prensky, M. (2001) Digital natives, digital immigrants part 2: Do they really think differently? *On the Horizon*, .
- Priyakanth, R., Abburi, R. & Praveena, M. (2021) Design and impact of interactive video content for the improvement of student engagement and learning. *Journal of Engineering Education Transformations*, 34 518-523.
- Reuters (2019) *Indonesia completes fiber-optic network to bring internet to remote east*. Available online: <https://www.reuters.com/article/us-indonesia-infrastructure-idUSKBN1WT0XC> [Accessed 22 March 2021].
- Selwyn, N. (2008) Realising the potential of new technology? assessing the legacy of new labour's ICT agenda 1997–2007. *Oxford Review of Education*, 34 (6), 701-712.
- Selwyn, N. (2012) *Education in a digital world: Global perspectives on technology and education* Routledge.
- Selwyn, N. (2016) *Education and technology: Key issues and debates* Bloomsbury Publishing.
- Siemens, G. (2005) Connectivism: A learning theory for the digital age. *international journal of instructional technology and distance learning*. *Obtained through the Internet: Http://Www.Idtl.Org/Journal/Jam\_05/article01.Htm*. [Accessed Sept.2008], .
- Skinner, B. F. (1961) Why we need teaching machines. *Harvard Educational Review*, .
- SMK Kemdikbud (2019) *Kemendikbud luncurkan program digitalisasi sekolah di kabupaten natuna*. [Accessed 22 March 2021].
- Southall, S. P. (2012) Prensky's digital native/digital immigrant dichotomy: A critique. *Society for Information Technology & Teacher Education International Conference*. Association for the Advancement of Computing in Education (AACE).
- The Jakarta Post (2019) *Listen up, students: Nadiem wants to do away with national exam*. Available online: <https://www.thejakartapost.com/news/2019/12/12/listen-up-students-nadiem-wants-to-do-away-with-national-exam.html> [Accessed 29 March 2021].
- UNESCO (2018) *A draft report on a global framework of reference on digital literacy skills for indicator 4.4.2: Percentage of youth/adults who have achieved at least a minimum level of proficiency in digital literacy skills*. [Accessed 22 March 2021].

- United States Office of Educational Technology (1996) *Getting america's students ready for the 21st century: Meeting the technology literacy challenge: A report to the nation on technology and education* US Department of Education.
- Wall, D., Clapham, C. & Alderson, J. C. (1994) Evaluating a placement test. *Language Testing*, 11 (3), 321-344.
- White, D. S. & Le Cornu, A. (2011) Visitors and residents: A new typology for online engagement. *First Monday*, .
- Yanti, M. T., Kuntarto, E. & Kurniawan, A. R. (2020) Pemanfaatan portal rumah belajar kemendikbud sebagai model pembelajaran daring di sekolah dasar. *Adi Widya: Jurnal Pendidikan Dasar*, 5 (1), 61-68.
- Yunus (2017) *Mengkritisi kompetensi guru*. Available online: <https://news.detik.com/kolom/d-3741162/mengkritisi-kompetensi-guru> [Accessed 22 March 2021]
- Yunus Syarif (2019) *6 agenda nadiem makarim revitalisasi pendidikan indonesia*. Available online: <https://kumparan.com/syarif-yunus/6-agenda-nadiem-makarim-revitalisasi-pendidikan-indonesia-1s7>