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**Research Report**

## Promoting Digital Literacy Skill for Students through Improved School Curriculum

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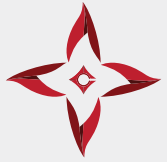
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## Policy Brief No. 11

# Promoting Digital Literacy Skill for Students through Improved School Curriculum

by Nadia Fairuza Azzahra & Felippa Amanta

### Key Messages:

- Between 2015 and 2019, Indonesian Internet users increased by 22%. In 2019, 43.5% of the 270 million people in Indonesia had access to the Internet. Of the roughly 117.5 million people with Internet access, 25.5% are children and adolescents. Digital activity has also intensified, especially during the Covid-19 pandemic.
- There is an urgent need to increase digital literacy from an early age to minimize the risk of online harm, to equip children who are future voters and consumers with the skills and understanding they need to assume those roles, and to maximize meaningful use of the Internet.
- Generally, Indonesians have poor digital literacy. This problem was exacerbated when Information and Communication Technology (ICT) was dropped from the national school curriculum in 2013.
- Several government initiatives, including the National Literacy Movement (*Gerakan Literasi Nasional/GLN*), the Siberkreasi program, and reintroducing ICT to the school curriculum, have yet to be implemented effectively and with a specific focus on improving digital literacy skills.

- To strengthen students' digital literacy, the Ministry of Education and Culture and the Ministry of Religious Affairs need to improve the curriculum for teaching ICT. This requires the participation of the Ministry of Communications and Informatics and non-government actors with special expertise in digital solutions. It has to apply a new approach of cultivating critical thinking skills in the classroom, improving teachers' capacities in both ICT and critical thinking, and introducing basic digital literacy skills for parents.
- The Ministry of Education and Culture, and the Ministry of Religious Affairs need to cooperate with the Ministry of Communication and Informatics on expanding technology and Internet access, especially for students living in rural areas. This requires the cooperation of the private sector.

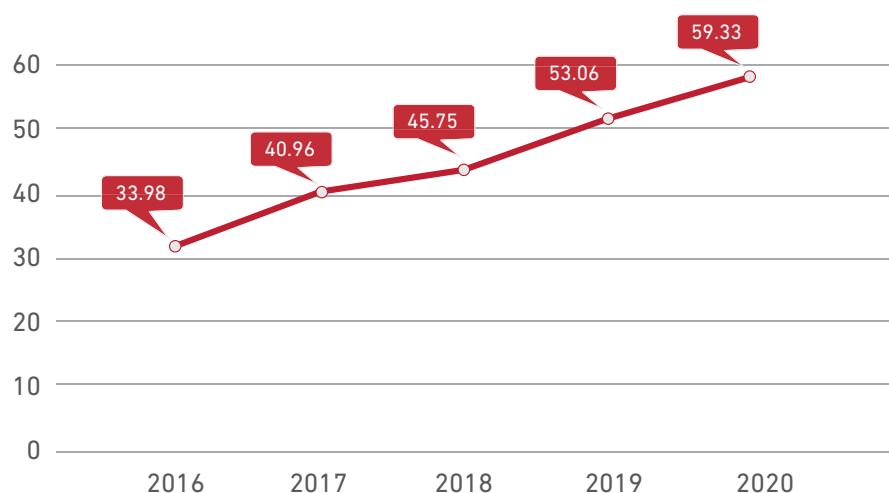
## Digitalization and Digital Literacy in Indonesia



The number of Internet users in Indonesia has increased significantly in recent years. Between 2015 and 2019, Internet users increased by 22%. In 2019, 43.5% of the 270 million people in Indonesia had access to the Internet (Statistics Indonesia, 2020a). While the greatest increase comes from people living in urban areas, where the number of users increased by 53%, rural areas have also experienced a steady rise, increasing by 31%.

Young people have also enjoyed increasing access to the Internet. In the past four years, the percentage of Indonesian students aged 5–24 years who have access to the Internet increased sharply from 33.98% to 59.3% (Statistics Indonesia, 2020b) (Graph 1). Slightly more than a quarter of Internet users (25.5%) are children and adolescents.

**Figure 1.**  
**Percentage of students aged 5–24 years old who have access to Internet (2016–2020)**



Source: Statistics Indonesia (2020b).

Digital activity has also surged. A survey conducted by Hootsuite and We are Social (2021) reveals that Indonesian respondents aged 16–64 years old spend an average of 7 hours and 52 minutes on the Internet every day. This is higher than the global average of 6 hours and 54 minutes per day. Indonesia ranks 8<sup>th</sup> out of 42 surveyed countries in terms of most time spent on the Internet, higher than Singapore and Vietnam and lower than the Philippines and Malaysia.

Children are also well engaged on the Internet, especially in social media. Focus group interviews in Cambodia, Indonesia, Malaysia, and Thailand conducted by UNICEF (2020) found that many children manage multiple social media accounts for entertainment, communication, and education purposes. Some of them are not only consumers but also content creators.

During the Covid-19 pandemic, digital activities have expanded and intensified as many people have had to shift to online solutions. For example, new digital consumers in e-commerce in Indonesia increased as much as 37% during the Covid-19 pandemic in 2020 (Google et al., 2020; Ministry of Trade, 2020). Due to long-term school closures, educational activity has also shifted online, especially in urban areas. As a result, children are exposed to an expanded range of digital content and products and become a more important segment of online consumers.

However, the remarkable growth of Internet use in Indonesia has not necessarily corresponded with improved digital literacy. This refers not only to the ability to use technology, such as skills to use devices, software and the basic use of the Internet. It also includes digital literacy skills that revolve around the ability to understand, evaluate, and responsibly use information acquired from digital sources, which is the subject of this policy brief. Considering the premature development of digital literacy in Indonesia, this brief will not engage in a discussion of more advanced levels of digital literacy that require an understanding of cybersecurity, digital citizenship, data privacy, etc.

According to the Economist Intelligence Unit (2020a), Indonesia ranks 61<sup>st</sup> out of 100 countries for its level of education and preparedness to use the Internet. Indonesia's position is lower than neighboring countries such as Singapore and Malaysia, which rank 22<sup>nd</sup> and 33<sup>rd</sup>, respectively. The low level of digital literacy in Indonesia, especially in rural areas, limits what Internet users can meaningfully do when they are online and may exacerbate the digital divide<sup>1</sup> (Purbo, 2017).

<sup>1</sup> Digital divide is a gap between individuals, families, enterprises, and geographical areas at various socio-economic levels in terms of both their access to information and communication technology (ICT) resources and their use of the Internet for any purposes.

# The Urgency of Digital Literacy Improvement

As Internet use pervades every aspect of life, the urgency of improving digital literacy increases. This includes improving understanding of how to use digital products in a responsible manner and taking advantage of opportunities and resources available on the Internet. There is wide agreement that users must be equipped with the skills needed to maximize the benefits from their online activities (Purbo, 2017). Building these skills can begin at a young age, especially when children are already exposed to the Internet.

Children are quite agile in their technology use, but this does not necessarily translate to maturity in content consumption and engagement. Many online platforms are not designed for children and there are hardly any barriers to prevent their accessing inappropriate content. Without a thorough understanding of digital literacy, children may be susceptible to online threats and harmful content including hoaxes and misinformation, cyberbullying, online fraud, and even sexual exploitation.

Awareness of hoaxes and misinformation is especially relevant in light of the societal threats posed by populist and radical internet content that can threaten democratic norms and institutions. As future voters, citizens, and political participants, children must be prepared to confront and recognize dangerous and misleading content and sources.

In addition to preventing immediate online harm, acquiring digital literacy at an early age prepares children to become consumers of online goods and services. In the interest of future consumer protection, children should be equipped with the ability to critically assess online terms and conditions and understand consumer rights, and data privacy. The Indonesian Consumer Empowerment Index (*Indeks Keberdayaan Konsumen/IKK*) stood at 41.70 in 2019.<sup>2</sup> This score indicates that Indonesian consumers understand their role but are not yet critical in terms of using their rights and obligations (Ministry of Trade, 2020). Improving digital literacy among children can help to improve performance on this index in the future.

Digital literacy is also important because it opens the door to employment opportunities and facilitates the mastery of other essential skills (Karpati, 2011). Digitalization constantly creates and transforms jobs throughout the labor market. Digital literacy skills give students the ability to thrive in this dynamic digital environment.

The Personal Data Protection Bill (*Rancangan Undang-Undang Perlindungan Data Pribadi/RUU PDP*) under development in the Indonesian House of Representatives considers introducing a minimum age of 17 years for setting up a social media account without parental consent (Sari, 2020). This policy is intended to protect children from harmful internet content, but it will have the effect of reducing opportunities to build digital literacy that will allow them to innovate and thrive in the modern world. Equipping children with digital literacy will help them to be digitally resilient, to make responsible decisions, and to optimize the benefits of spending their time online.

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<sup>2</sup> The Indonesian Consumer Empowerment Index (IKK) measures consumers' ability to empower themselves. The IKK index is grouped into 5 scoring systems: 1. Aware—recognize their rights and obligations as consumers (0.0–20.0); 2. Understand—understand their rights and obligations to protect themselves (20.01–40.0); 3. Capable—able to decide the best choices as consumers and prioritize local products (40.1–60.0); 4. Critical—actively defend their rights and prioritize local products (60.1–80.0); 5. Empowered—actively defending consumers' interest in interacting with the market (80.1–100.0).

# Teaching Digital Literacy Skills in Indonesia

Digital literacy is strongly dependent on basic literacy skills—reading and writing comprehension. Unfortunately, Indonesia consistently performs poorly in literacy. Fifteen-year-old Indonesian students surveyed in the Programme for International Students Assessment (PISA) 2018 ranked 71st out of 79 countries. Only 30% demonstrated at least level 2 proficiency<sup>3</sup> in reading, compared to the OECD average of 77% (OECD, 2019). On the other hand, 70% of Indonesian adults living in Jakarta perform at or below level 1 in literacy, according to the Survey of Adult Skills (PIAAC) (OECD, 2016). These surveys highlight that, while the majority of Indonesians can understand simple texts using basic vocabulary, they have difficulty understanding and critically evaluating long and complex texts.

A contributing factor toward low literacy levels is the lack of emphasis on critical thinking skills in the school curriculum. The National Curriculum 2013 mandates the implementation of High Order Thinking Skills (HOTS) but it is not well-integrated into or widely taught during teacher training in Indonesia (Ilyas, 2015). In practice, Indonesian education focuses on older approaches to learning, such as memorization (WENR, 2019; UNICEF, 2017).

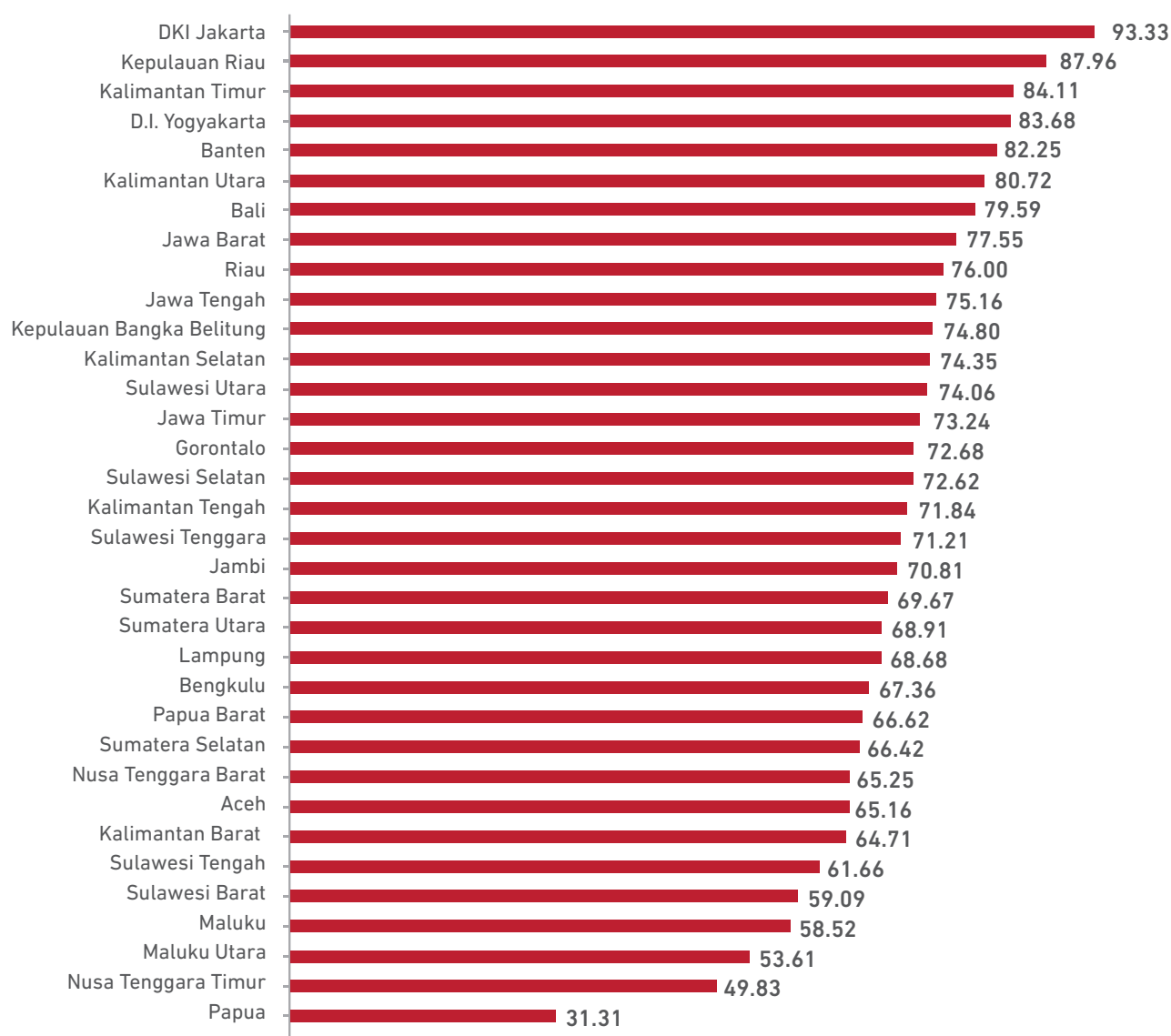
In addition to the problems of low literacy and poor critical thinking skills in the general population, digital literacy education is largely missing from Indonesian schools. Information and Communication Technology (ICT) was included as a compulsory subject in the National Curriculum 2006 (also known as *Kurikulum Tingkat Satuan Pendidikan* or KTSP), but content was limited to basic skills such as how to use a computer, computer applications, and devices to support study activities. In 2013, the Ministry of Education removed ICT from the list of compulsory subjects in the National Curriculum 2013 with the intention of integrating ICT learning across all school subjects (Bona, 2018). However, many public schools responded by dropping the subject altogether (Purbo, 2017). Teachers of other subjects were unable to incorporate ICT into their lesson plans because their own ICT skills and knowledge were insufficient, whereas ICT teachers were confused by the removal of the subject from the National Curriculum 2013 (Subekti, Yudha, & Luqman 2016). As a result, many Indonesian students have received no education in ICT.

The inequality of Internet access across the different regions of Indonesia and the socioeconomic conditions of Indonesians are the major structural challenges for the improvement of digital literacy. First, the percentage of households that can access the Internet is the highest on the most densely populated island of Java while it is much lower in the eastern parts of Indonesia (Statistics Indonesia, 2019b), as illustrated in Figure 2.

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<sup>3</sup> PISA 2018 has a scale of 1–6 to indicate reading proficiency. The scale 1 consists of 1a, 1b, 1c, indicating the proficiency of understanding simple text with literal meaning. Scale 2 indicates the ability to identify the meaning of moderate-length text. Scale 3 indicates the ability to understand multiple texts. Scale 4 students can understand indirect cues and nuances in a single or multiple texts. Scale 5 students are able to compare the meaning of multiple, lengthy texts. Scale 6 indicates the ability to understand long and abstract texts and use multiple criteria to validate the information.

**Figure 2.**  
**Internet Access (percent) per Household by Province in Indonesia (2019).**



Source: Statistics Indonesia (2019b)

Internet users are predominantly households with higher incomes. They are more likely to afford and access devices and internet subscriptions (Bachtar et al., 2020). Lack of Internet access is strongly linked to low levels of digital literacy. Inexperienced users are unlikely to be as competent or resilient as those who use the Internet on a daily basis. Expanding access, especially to disadvantaged communities, is crucial for digital literacy improvement.

The inequality of access is also visible in the education sector. According to Statistics Indonesia (2018), only 69% of primary and junior secondary schools and 74% of senior secondary schools have access to the Internet. This results in low and widely varying levels of ICT competence and digital literacy among Indonesian teachers (Widodo & Riandi, 2013 cited in Koh et al., 2018).



# Current Efforts to Mainstream Digital Literacy in Indonesia

Improving digital literacy is one of five priorities in the government's plan to accelerate the digital transformation in Indonesia (Cabinet Secretariat of the Republic of Indonesia, 2020). However, there is no solid set of policies or clearly targeted outcomes related to digital literacy (The Economist Intelligence Unit, 2020b).

Efforts to increase digital literacy start from the basic level of increasing general literacy by nurturing the ability to understand, interpret, create, and communicate texts. They must also involve critical thinking skills and the ability to critically observe, analyse and interpret information and the logical connection between ideas, to support rational individual decision-making processes. Finally, and following a more specific definition of digital literacy, they require the ability to find, evaluate, use and create content on digital platforms.

Dealing with such a complex set of necessary skills involves programs and activities spread across government agencies. In Indonesia, this includes the Ministry of Education and Culture, the Ministry of Religious Affairs as well as the Ministry of Communication and Informatics.

In order to promote general literacy, the government has initiated programs such as the National Literacy Movement (Gerakan Literasi Nasional/GLN), established by the Ministry of Education and Culture (MOEC) in 2016. It includes the promotion of literacy in three areas: literacy in schools (Gerakan Literasi Sekolah/GLS), family (Gerakan Literasi Keluarga/GLK), and society (Gerakan Literasi Masyarakat/GLM). GLN was mandated through MOEC Regulation No. 23/2015 on Developing Character on Students with the purpose of synchronizing all literacy programs that have been running in each MOEC directorate and expanding public involvement in the development of literacy culture in Indonesia. The main focus on this movement is to cultivate reading habits of students.

The GLN guidelines also addresses digital literacy and defines it as the skills to make use of information from digital sources in an accountable manner. It includes the aim of developing digital learning habits and improving the use of digital media in school education (GLN, 2017), but it does not seek to increase the skills to critically analyze and navigate digital sources. The evaluation of digital literacy according to the GLN guidelines merely assesses whether stakeholders have integrated digital sources and media in the learning process and their daily life (MOEC, 2017).

Several MOEC regulations are of relevance in this context. Increasing digital literacy is not being directly addressed in the National Education Standards<sup>4</sup>, but critical thinking skills are included. MOEC Regulation No. 20/2016 specified them as the basic competency standard required for primary and secondary school graduates. MOEC Regulation No. 21/2016 on the Standard of Content for Primary and Secondary Education also mentioned critical thinking skills as one of the indicators for mastering school subjects.

While MOEC Regulation No. 22/2016 on the Standardized Process of Primary and Secondary Schools demands that the learning process must include activities of observing, questioning, and analysing, which are essentially critical thinking skills, these skills have not become an indicator to assess students' competence in MOEC Regulation No. 23/2016 on the Education Assessment Standard.

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<sup>4</sup> National Education Standards are the minimum standards in Indonesia's education system. They consist of eight standards: 1). Standard of content; 2). Standard of process; 3). Graduate competence standard; 4). Teachers and educational personnel standard; 5). Standard of facilities and infrastructure; 6). Management standards; 7). Financing standards; 8). Educational assessment standards.



A basic level of digital literacy training addresses the technical competence to use digital devices and software. In that regard, MOEC Regulation No. 37/2018<sup>5</sup> reintroduced ICT as an optional subject at the primary school level and made it a compulsory subject for junior and secondary middle schools (SMP/SMA) beginning in the 2019 academic year. However, deficiencies of the ICT curriculum with respect to digital literacy remain. The curriculum puts a strong focus on understanding and improving technical competence in areas such as programming, using office applications, and writing blog posts, while there is insufficient emphasis on how to responsibly and critically use these technologies. The national curriculum has to be based on the National Education Standards, which include critical thinking skills. However, MOEC Regulation No. 37/2018<sup>6</sup> does not integrate critical thinking skills in the ICT subject.

For the schools under the Ministry of Religious Affairs (MORA) such as *Madrasah*<sup>6</sup>, MORA Regulation No. 184/2019 on Guideline of Curriculum Implementation in Madrasah has yet to include digital literacy in the curriculum. The subject that seems most suitable to convey digital literacy is informatics (*informatika*), but it is an optional and not a mandatory subject on junior and senior secondary levels of Madrasah. It is not offered on the primary education level. As for other institutions of Islamic education, such as *Pesantren*,<sup>7</sup> the curriculum is designed by the Kyai or prominent figures in the institution without the intervention of MORA (Azzahra, 2020). *Pesantren* may teach ICT skills, but the exact number of *pesantren* teaching ICT remains unknown. Most *Pesantren* are traditional by nature anyway and unlikely to address digital technologies. There is no information available on how many *Pesantren* are equipped with necessary facilities such as Internet and computers.

Despite the lacking focus on digital literacy skills in the national curriculum, some schools, especially those operated by the private sector, have integrated digital literacy in advanced ICT classes. They go beyond the national curriculum requirements, when they teach 21st century skills such as digital citizenship, critical thinking and problem solving (Sampoerna Academy, n.d; British School Jakarta, n.d). Still, this will only be accessible for students from upper-income families. Most schools in Indonesia are not equipped with digital facilities and lack the human resources to teach students digital literacy and not just the functionalities of digital devices. Mainstreaming digital literacy must, therefore, go beyond the initiatives of individual schools and requires significant support from the government.

More specifically addressing digital literacy, Ministry of Communication and Informatics (MOCI) initiated the National Digital Literacy Movement (*Gerakan Nasional Literasi Digital* or *Siberkreasi*) to improve digital literacy skills in Indonesia. *Siberkreasi* is a multi-stakeholder initiative aimed at reducing misinformation and negative contents on the Internet through public awareness activities by private businesses, civil society organizations, etc. As part of the movement, MOCI also provides online references and digital sources through the website [literasidigital.id](http://literasidigital.id) in the form of videos, articles, and e-books on digital literacy. It also encourages the government to include digital literacy in the school curriculum (MOCI, 2019a).

As of 2019, 20,472 people had participated in offline *Siberkreasi* programs, including seminars, workshops, and talk shows in 25 provinces. Audiences included both students and adults (MOCI, 2019b).

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<sup>5</sup> This policy brief specifically addresses the curriculum after the ICT subject has been reintroduced

<sup>6</sup> Madrasah is an Islamic education institution that teaches the national curriculum and uses methods similar to formal schools but also incorporate weekly hours of Islamic instructions. Madrasah are found on all levels of school education: primary (Madrasah Ibtidaiyah/MI), junior secondary (Madrasah Tsanawiyah/MTs), and senior secondary (Madrasah Aliyah/MA)

<sup>7</sup> *Pesantren* is a culturally-rooted Islamic educational institution in Indonesia characterized by its boarding school element and traditional method of teaching Islamic theological materials.

However, the scope of this program remains limited and it is unknown whether it has improved digital literacy. There is no program evaluation incorporated into *Siberkreasi* and digital literacy has not yet been added to the school curriculum.

In 2021, MOCI and its *Siberkreasi* partners plan to publish a Digital Literacy Module 2021-2024 which covers four aspects of digital literacy, namely digital skills, digital safety, digital ethics, and digital culture.<sup>8</sup> This module is supposed to provide practical tips on improving digital literacy skills. There will also be equipped with evaluation parts in every chapter to assess users' understanding.

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<sup>8</sup> The module is yet to be published during the time of writing process of this policy brief

# Policy Recommendations

- **Create a comprehensive inter-ministerial framework for digital literacy**

MOCI and MOEC have cooperated in organizing events on digital literacy, however, despite the fact that both address the improvement of digital literacy, the National Literacy Movement and *Siberkreasi* are largely separated from one another. There is a need to streamline efforts in a comprehensive inter-ministerial framework.

- **Improve digital literacy education in the school curriculum**

As ICT education was reintroduced in schools in 2019, MOEC and MORA should adjust the curriculum to fit the demands of the digital age. Students must be prepared to be responsible and literate digital citizens and consumers. The curriculum should prioritize cultivating the ethical and responsible use of technology as well as navigating myriad information in the digital settings.

The curriculum should prioritize responsible information use and sharing, identification of trustworthy sources of information, and protecting students during their online activity. These skills are more relevant than the dated ICT content in the curriculum.

Teaching material must be simplified and adjusted to the specific age groups in school, while also involving parents to guide and support their children in online activities.

- **Cultivate critical thinking across all school subjects**

Critical thinking skills are a crucial prerequisite to improving digital literacy. Critical thinking is necessary for understanding and verifying information from online sources. In developed countries such as Finland and Switzerland, critical thinking is an integral aspect of education. MOEC and MORA should rethink and provide guidance on how to better integrate critical thinking skills across all learning activities, while learning lessons from the shortcomings of this strategy for ICT education. Practices such as working collaboratively with peers, using HOTS content and questions for assignments and exams, and cultivating a habit of questioning, analyzing, and crafting arguments in discussion should be part of every classroom.

- **Include digital literacy and critical thinking in teachers' training**

Digital literacy materials should be included in teachers' training. Without improving the low overall ICT competence and critical thinking pedagogy among teachers, they will not be able to play their part in improving the digital literacy of students.

- **Equipping the parents with basic digital literacy skills**

Developing responsible online behavior starts at home. To be able to supervise the online activities of their children, parents must themselves know how to navigate social media, find reliable news, and critically assess the content. Parents need to have basic digital literacy skills because they are also not immune to digital threats. MOCI's *Siberkreasi* needs to create training modules and offer courses that target parents.

- **Cooperating with the private sector to formulate relevant curriculum content**

The digital space is dynamic and ever-changing. The education sector has difficulty keeping up. In order to improve the dynamics of digital literacy education, MOEC and MORA should coordinate with MOCI and engage in partnerships with private sector experts. The private sector has been engaged in public seminars and talk shows through MOCI's *Siberkreasi* program, but not in improving the school curriculum. These external experts can help the government to formulate relevant indicators for the digital literacy contents skills in the school curriculum.

- **Improving access of technology to support digital inclusion**

Improving Internet access and technology, especially in rural parts of Indonesia, should remain a government priority in order to address the digital disparity and open up opportunities for disadvantaged families. MOCI is planning to equip about 12,000 villages with Internet access. Private sector involvement, which has been considered, should be encouraged. MOEC and MORA should also cooperate with the private sector to equip schools, especially in rural areas, with Internet access, laptops, and computers.

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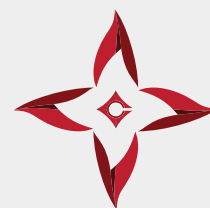
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