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EFFORTS TO SUPPORT AND EXPAND THE USE OF EDUCATIONAL TECHNOLOGY AS A MEANS OF DELIVERING LEARNING

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Abstract
Indonesian government has made improving basic education a priority, and indicated that it sees technology as a way to provide teachers with the means to teach innovative lessons while closing the performance gap between rural and urban schools and between poorer and richer provinces. The role of technology must be aligned with the existing education ecosystem. It should not replace the traditional education system that involves teachers, schools, universities and parents, albeit offering wide range of information and allowing independent learning. Education is not only about learning in school, but also building acharacter. That is why the role of technology is intended as a tool to support the learning process, to open access, and improve quality. This paper describes the efforts taken by the Indonesian government in supporting and expanding the useof technology in the field of education in Indonesia. The discussions are supportedby related research findings and literature.

Keywords: education, digital technology, learning, supporting, teaching

Introduction

Education is the main basis for human character development, not only includes what is happening in a classroom but also the utilization of other factors, such as technology. "Technology can be difined as the product or process minimizing the difficulties … Parallel to the rapid development of information and communication technology, the demand for its use … is increasing" (Tugun, 2016). "While digital technologies are used for fun and communication, they are also used in education and provide a learning process for both teachers andstudents" (Tugun, 2016).

Indonesians have embraced technology warmly, like many part of developing countries "taking advantage of rising incomes to buy smartphones that give them access to a host of social networking platforms and other services". In 2014 Indonesia had 44.7m active smartphone users, a number that is expected to rise to 53.86m in 2016. In 2018 there are 70.22m, and by 2019-2022 there are forecast to be more than 89m smartphone users across the archipelago, the fourth-highest

level in the world after China, India, and the Us (Central Bureau of Statistics 2011). Against that backdrop, and Indonesia's geographical and fiscal realities,the government has turned to technology as a cost-effective way to expand learning and ensure more people. Digital tools are being introduced throughoutthe system, from basic education to tertiary, spawning a flurry of start-up activity in the sector. Indonesia set up its own school broadcast, TV Edukasi (TV-E), in 2004 and is part of SEA Edunet, a satellite-based learning platform design toshare educational materials among countries in South-east Asia. In 2006 it launched Jardiknas, a national education network to connect all the state's various educational institutions.

Indonesia has approximately 147,000 elementary schools, 37,000 junior high schools, 13,000 general senior secondary schools, and 13,200 vocational senior secondary schools. These schools serve around 25,618,000 students in elementary school, 10,145,000 students in junior high schools, 4,659,000 students in general senior secondary school, and 4,682,000 students in vocational senior secondary schools (Ministry of National Education 2016/2017). "Out of 208,000 schools in Indonesia, 118,000 have been connected to internet, whereas 17,000 still experience a lack of electricity" (Anies Baswedan, former minister of education). Papua, the country's poorest and most eastern province, provides an indication of the scale of the challenges. When ACDP Indonesia, a cooperative initiative by the Indonesian and Australian governments and the ADB, carried out an evaluation ofTV-E and other IT initiatives in Papua, they found that most schools surveyed hadless than five computers, with few laptops and no tablets. It also found that teachers were more likely to use ICT than students, but did so for administrative purposes rather than for lessons.

Theory

Indonesia start-ups are also eyeing opportunities in education technology, focused on the provision of online classes. While these digital initiatives have generated plenty of positivity, underlying infrastructural problems may limit their potential. A lack of electricity also affected attempts to use technology, with unstable power in urban areas and only 30% electrification overall. Some 78% of primary schools and 8% of secondary schools relied on diesel generators after dark. In "Global Information Technology Report 2015", the World Economic Forum ranked Indonesia 79th out of the 143 countries it surveyed. However, it dropped to 98th in infrastructure and digital content, which looks at network coverage, bandwidth, and electricity production.

Considering the large number of schools and wide geographical distribution of the schools in Indonesia, "Indonesia could face a shortage of 9 million skilled workers by 2030. As internet penetration gets better and infrastructure improves, online education or digital education one of the potential solution". Therefore, educational technology in Indonesia will be fully dependent on the internet and electricity in every provinces as described above. Further description of the efforts taken in supporting and expanding the use of technology as a means of delivering learning in Indonesia is explored in this paper in order to provide a more information about educational technology in indonesia. Educational technology in

Indonesia are then presented at the end of this paper as predictions based on the use of educational technology in the process of learning in schools that is happening at this moment and will continue in the coming years.

Digitizing Education in Indonesia

Progress in the development of science and technology has contributed well to education. This can be felt by the education community (lecturers, teachers, students) in terms of accessing learning materials. Learning materials can beeasily accessed through electronic media. The emergence of digital technology as one of the electronic media has formed a new paradigm in the learning processand management of educational organizations. The rapid development of information and communication technology has brought enormous changes to the world of education. The application of information and communication technology, especially in the development of national education, is now mandatory. The development of digital technology has triggered a shift in education from conventional (face-to-face) education towards more open education. Education will be more bidirectional, competitive, multidisciplinary, and high productivity.

The development of technology is enough to have a positive impact on Indonesian Education. Actually Education in Indonesia itself has undergone many innovations from year to year in the form of infrastructure that is used to expedite the course of teaching and learning activities as well as the entire Education system. The goal is that Education becomes more effective, efficient, and attractive to students and teachers. Even today Indonesia has run a UNBK (Computer-Based National Examination) which increasingly adds quality, simplifies, and cheapens the course of the National Examination itself.

Based on a survey conducted throughout 2016 by the Indonesian Internet Association (APJII) revealed that more than half of Indonesia's population is now connected to the internet. It is estimated that Indonesia's population of 256.2 million people, there are as many as 132.7 million people who become activeusers of the internet. "Based on education level, as many as 88 percent of internet users in Indonesia are S2 or S3 graduates, then 79.23 percent are undergraduate ordiploma graduates. Internet users who are high school graduates or equivalent reach 70.54 percent". The internet users graduating from junior high school or equivalent reached 48.53 percent and elementary school graduates or equivalent reached 25.10 percent. The data shows the magnitude of the potential for digitizing the world of education in Indonesia through platforms that have been and are being built by various companies. And then Education will become a hugenew market in the digital world itself.

Digitizing educational technology seeks to make use of various learning resources so as to facilitate or facilitate a person to study anywhere, anytime, and by anyone. By utilizing educational technology, learning and learning problems can be solved in every educational activity. This is a fundamental important point of innovation, namely problem solving. Digitalization of Education is also expected to be able to solve the problem of inequality in education in Indonesia. Because Indonesia is an archipelago country that is very large and wide, it is necessary to innovate technology in solving education problems in order to

facilitate and facilitate the distribution of education and solving other educational problems. With the increasingly widespread internet access today it is appropriate that Indonesian Education must be "forced" to use the internet and digitize so as not to lag behind other countries. This must be accompanied by the cooperation of various parties that take part in it, such as the government, the private sector or the company, and cover the entire range of people involved in the Education unit.

Theory Application

Accelerating access to education facilities through digital is expected to solve the problem of inequality in education in this nation. Because the access of the large Indonesian people and almost more than fifty percent are active users of internet media, is the main capital in solving these educational problems. That means the users are spread in almost all parts of Indonesia. "Indonesia needs 128 years to be able to catch up with education from developed countries, and to be able to catch up, technology is the answer" (CEO Ruangguru). In catching up must be done by developing an educational application, where studentsthroughout Indonesia can access the subject matter by watching videos or learning animations, and other teaching materials for free. Today many companies have emerged that are building platforms for the world of education, ranging from course provider services, connecting students with mentors, to educational social media that have begun to emerge and are growing.

Education Start-Ups In Indonesia

The growth of education start-ups in Indonesia is slow but steady, a new report titled "Indonesia Digital Education and E-Learning Market Outlook to 2018Rising Trend of Blended Learning to Drive the Future Growth" notes that "the total spending on digital education in Indonesia has grown over the last five years,and that there has been improved collaboration between educational institutions and digital education providers in order to equip their classrooms with digital educational facilities". There are five of the top education start-ups operating right now in Indonesia that have chosen to take part in improving the education quality. These are some of education start-ups that have come in to fill the need-gap in Indonesia:

1. Harukaedu

Harukaedu is an online education platform for tertiary education in Indonesia. Harukaedu was established in 2013 by Jakarta Founder Institute director Novistiar Rustandi, Harukaedu "monetises through a revenue-sharing scheme with its university partners. The start-up raised an undiclosed amount of series a Funding from CyberAgent Ventures, a well-known Japanese tech investment firm with an office in Jakarta". Harukaedu helps Indonesians earn degrees online, and helps colleges and universities build online degree programs from scratch. Recently, the start-up partnered with The London School of Public Relations and Wiraswasta Indonesia University in Jakarta to offer an online degree in Communication Studies and and Management. The start-up also offers online technology entrepreneurship classes in Indonesia, and plans to incorporate several other web- based certification programs in the future. Harukaedu believes online learning is one of the best solutions for solving higher education problems in Indonesia.

2. Ruangguru

"Launched in 2014, the startup operates Ruangguru.com, an online marketplace for private tutoring with over 150,000 teachers covering more than 100 subjects. It also offers a mobile app and a learning management system". Ruangguru is committed to being a partner for the regional government to provide quality education through the Learning Management System (LMS). Ruangguru succeeded in cooperating with 32 (of 34) provincial governments and more than 326 city and district governments in Indonesia. In addition, Ruangguru also offers subscription learning videos, private tutoring marketplaces, on-demand learning tutoring services, online exam tryouts, and others.

Ruangguru is not only present as a business, but also aims to improve the quality of teachers by creating jobs and additional income for teachers in Indonesia. Ruangguru believes, with the improvement of teacher quality, the quality of education in Indonesia will also be better. Ruangguru also believes that technology can help students, teachers, and parents to carry out their activities more effectively and efficiently.

3. Quipper School

Quipper is an educational technology company with the mission of providing the best education in remote areas. First established in 2010 in London - United Kingdom, Quipper services can now be enjoyed in several countries such as Japan, Philippines, Mexico and Indonesia. Since 2015, Quipper has become part of the Indonesian education ecosystem by helping to provide, improve, and distribute quality education for teachers and students.

4. Kelase

Established in March 2013 under the banner of PT. Edukasi 101, Kelase was initiated by Brimy Laksmana as founder and president director and Winastwan Gora as director of research and development. Kelase is a social networking service and a safe online learning environment for both formal education institutions (elementary, junior high school, senior high school, vocational school,colleges, and universities) and non-formal (courses, tutoring institutions, and home schooling providers) . Kelase can be accessed from a variety of devices, both PC and mobile devices such as smartphones and tablets. The purpose of creating Kelase is to provide learning spaces that promote social aspects and collaboration, rich learning experiences, facilitate the governance of the educational process, monitor the development of the learning process, and bridge communication between teachers, students and parents. By using Kelase services, the learning process can be done anywhere and anytime. Kelase has been used by more than 80 educational institutions from various levels and is one of the training materials for the Indonesian High School Teachers' ICT Information and Communication Technology that will be implemented by the Directorate General of Secondary Education, Ministry of Culture and Republic of Indonesia.

5. Zenius

Zenius Education is a company engaged in education in Indonesia which has started its business activities since 2004 and was registered as an official company (PT) in 2007. The business model of Zenius Education is to sell access to teaching for all subjects from elementary school level (elementary) to high school (SMA)

in the Indonesian language video format presented both online through the website (zenius.net) and offline in the form of CD / DVD that can be accessed multimedia plaform (Personal Computer, Laptop, Tablet, and Smartphone). As of 2018, Zenius has successfully documented more than 74,000 video material lessons for 15 subjects from elementary - high school level. Zenius also provides more than 3,400 practice questions that can be downloaded for free, including the discussion of the National Exams/National Exams for elementary, junior high and high school level. In addition, Zenius also provides a video discussion of the questions.

The Scale of the Challenge

I concern with the fact that teachers and students need to have access to a computer and good internet connection to run the technology. This fact can be obvious challange, for lacking an access to a good internet connection and computer facilities remains a well-noted issue at many schools in some parts of Indonesia (Mali, 2015a,b;Tempo, 2015a,b; Redaksi1, 2015; Kaltim Post Group, 2015). To deal with this situation, "requesting a related Network Administration Team of a school or university to provide a free high-speed internet Wi-Fi within its area can be a possible solution. Importantly" (Thien, Phan, Loi, Tho, Suhonen, & Sutinen, 2013), "if sufficient computer facilities assisted by technical support are available at schools, teachers would be inspired to use CALL actively in their classrooms" (Park & Son, 2009, p.23).

Another challenge is also related to how teachers view the use of technology in their teaching practices. Some of them still have doubts if they possess technological skills to integrate technology in their future classrooms (Javad & Leila, 2015) and if they should "use online teaching such as e-mail, chat, or blog, in their teaching activities" (Cahyani & Cahyono, 2012, p.141). In that case, I agree that the teachers need technological training to "utilize technology into their teaching practices" (Cahyani & Cahyono; Javad & Leila) "and introduce them with 'types of computer technology that can support their immediate needs'" (Gilakjani, 2012, p.73). Then, the teachers should feel sure whether to use online or offline technology because I believe that they can always utilize both to support their teaching. Chaney, Chaney, Eddy (2010) make an important note that it is not a matter of on infusing a course of study with the latest and the most sophisticated educational technology but is more on utilizing technology that suits unique needs and interests of teachers and students.

The Steps Taken in Support

The government as the regulatory (policy) authority holder has taken concrete steps in the form of teacher competency improvement programs as policy implementation as stated in the Teacher Competency Improvement Program. Learners are designed based on Teacher Competency Standards (SKG) which refers to Minister of National Education Regulation No. 16 of 2007 concerning Academic Qualification Standards and Teacher Competencies. The capacity building includes activities that aim to improve and develop abilities (abilities), attitude (attitude), and skills (skills). From this activity, it is expected that it will produce a change in teacher behavior which in reality changes in behavior have an impact on improving teacher performance in the teaching and learning process in

the classroom. The lack of infrastructure is still a major obstacle in any implementation of technology-based programs but apart from all indicators of human resources in this case the teacher is an actor who is at the upstream part of the nation's educational problems.

In December 2015 Indosat Ooredoo pledged $1m over five years to enhance digital education. Working with two foundations, it will provide tablets loaded with the relevant apps and software to schools in five provinces. Cloud-based interactive learning materials willbe introduced in 65 schools and Indosat Ooredoo will work with the Ministry of Education to train teachers in the relevant IT skills. Microsoft has pledged to provide software to all the country's schoolchildren, and is working with the government to help teachers who may not be as comfortable with technology as their tech-savvy students. "We are developing software and tools for classroom activities to help teachers keep up with current trends and culture," (Andreas Diantoro, president director of Microsoft Indonesia).

In August 2015, IndonesiaX in partnership with EdX, founded by Harvard University and the Massachusetts Institute of Technology, launched a project to provide massive open online courses specifically tailored to Indonesian students. EdX also includes courses from Indonesia's Open University (UT), which launched in 1984 in the archipelago, making it a pioneer in the field of alternative learning. The institution currently has more than 450,000 students. While Indonesia's infrastructure development, Google is working on a technology that uses large balloons in the sky to ensure remoter areas have internet connectivity.In 2015 Google signed agreements with Telkomsel, Indosat, and XL Axiata tostart testing the technology titled Project Loon in Indonesia. The reality that there has been a far gap between competence and computerization makes acceptance of technology not an easy thing.

Conclusion

The use of technology in education still needs adjustment. Adaptation needs to be thought through because technology that is now said to disrupt, actually not only has a positive impact but also has a negative impact if it is not wise and careful. It is important to connect various strategic points in the education map to move forward, not only the use of advanced technology, but also understand the role of each stakeholder, understand the risks, challenges, and impacts, for current and future generations. Technology needs to be harmonized together with the existing educational ecosystem. Traditional education systems that involve teachers, schools, colleges and parents are not necessarily eliminated simply because of broad access to information that promises independent learning methods. The role of teachers, parents and schools will not be replaced because education is not only about gaining knowledge but also character building. The role of teachers, parents and schools will not be replaced because education is not only about gaining knowledge but also character building. With technology, educators and educational institutions can organize material and processes more efficiently, focus more on the formation of children's character. This policy is in

accordance with the government's aspiration to make Indonesian students future leaders of Asia and provide the ability to compete at the global level.

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