ICT in ASEAN Education:

Challenges and New Opportunities

The
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INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) MUST BE HARNESSED:

"...to strengthen education systems, knowledge dissemination, information access, quality and effective learning, and more effective service provision."

- INCHEON DECLARATION -
(2015)

EXECUTIVE SUMMARY

The Association of Southeast Nations (ASEAN) ICT Masterplan 2020 is focused on propelling the region towards a digitally-enabled, integrated economy. ICTs in education offer opportunities for governments in ASEAN and other emerging nations to address such key education challenges of quality, equity, and efficiency and to develop their human capital. This is especially so for developing nations undergoing education reforms and with a large youthful demographic. The challenges can be resolved through the strategic use of ICTs when a holistic approach towards ICT in education is adopted (ADB, 2009, 2011; Ra, Chin & Lim, C.P, 2016).

ICT development in ASEAN varies greatly. Singapore, on the one end of the spectrum, is ranked 16th globally with an ICT Development Index (IDI) value of 7.90, while Myanmar is ranked 150th with an IDI value of 1.82. Only three countries – Singapore, Malaysia, and Brunei – are reported to be above the global IDI average value of 4.77. The region's awareness of the need to improve education quality is growing and progress is evident in many areas. However, inequalities in quality teachers, infrastructure, and access still exist both within and between countries. To continue progressing towards the United Nations' 2030 Goals for Sustainable Development for quality education (SDGs), it is imperative to find ways to provide equitable and inclusive education, as well as lifelong learning opportunities for all in the region. Having a clear vision as well as a strong and competent educational leadership are

crucial for the region to continue progressing at all levels (UNESCO, 2008, 2014).

Based on the discussions from the HEAD Foundation's ICT Policy Forum held on November 7-8, 2016, what is evident is that each of these ASEAN nations represented is on its own path for ICT development. Overall, it is fair to say that considerable progress is being made with ICT implementation in many schools within ASEAN. Their focus of ICT has been relevant to the cultural, geographical, political and educational contexts of the respective nations. While international comparisons for benchmarking and modelling are certainly effective, the practices of others cannot serve as a direct replacement for a detailed analysis of one's own needs and contexts. It is critical to reflect as a nation on one's own needs, the available resources and ICT infrastructure while planning for ICT integration in education development programmes in the coming decade.

Singapore, for example, is more along the trajectory of thinking through the role that ICT will play for its future socio-economic plans and preparing its future workforce. Other ASEAN nations like Indonesia, Thailand, Philippines and Vietnam may have slower rates in the spread of ICT infrastructure, but the large populations of these countries represent significant markets for ICT – both fixed and mobile in the future. Lastly, the rising interest in Myanmar from international investors and aid organizations provides a unique opportunity for the nation to experiment with a variety of ICT based programmes,

based on the experiences of other countries in ASEAN.

A. Opportunities for Transforming Education with the Use of ICT

Recognizing the importance of education as a universal right and for the success of all, SDG 4 aims to ensure equitable access to quality education and improved learning outcomes – within a lifelong learning perspective for all. It is hoped that through this, the foundations of a sustainable and inclusive knowledge society will be built.

In order to deliver on this commitment to SDG 4, the 2015 Qingdao Declaration has emphasized the need for the application of ICT in education (UNESCO, 2015), in view of the unprecedented opportunities it offers to improve the quality, equity and efficiency of education systems, i.e. to transform education as we know it *(Figure 1)*.
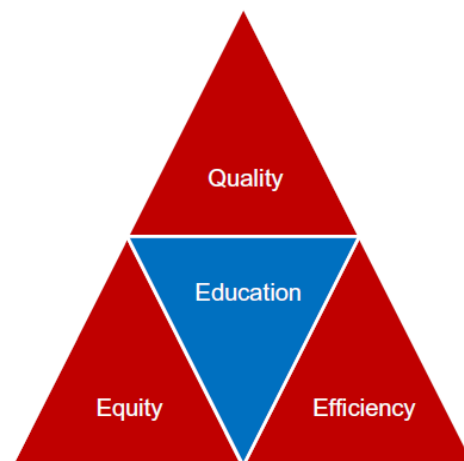

Figure 1: Framework for the transformation of education with the strategic use of ICT (Ra, S., Chin, B., & Lim, C.P., 2016)

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[1] UNESCO Bangkok defines quality education as one that satisfies the basic learning needs and enriches the lives of learners and their overall experience of living.

A number of research studies have shown that ICT-enhanced pedagogies can **improve the quality of education, in terms of both the teaching processes and learning outcomes.** The use of ICT can also support teachers in adopting more student-centred pedagogical approaches for constructivist learning amongst students. Similarly, there is potential for teacher capacity building as ICT allows for the sharing of best practices and digital learning resources between teachers and between schools.

A study by Kulik (2003), in which he statistically compared 75 studies conducted in the USA, found that students who used computer tutorials in mathematics, natural sciences, and social sciences scored significantly higher on tests in these subjects. (UNESCO, 2011, p.16). Students who used computer tutorials also had more positive attitudes towards technology, instruction, and the subject matter than did students who were not exposed to blended learning approaches. Teachers can plan lessons using design thinking, tailor-make activities according to student learning needs, and build a professional learning community (Lim, 2012).

Based on the aforementioned studies, there is reason to believe that ICT can enhance teaching, learning environments, student motivations, and their scholastic performance. This is for several reasons; for one, the interactive capacity of ICTs provides opportunities for students to engage more pro-actively in their learning process. Additionally, it opens up the possibility of adapting learning content and pedagogy to the needs and capabilities of individual students for a more personalized learning experience.

In terms of ensuring equitable access to quality education, ICT can serve as an **enabler of a more inclusive learning environment.** It can provide students with access to educational resources that might not otherwise be available to them, due to infrastructure, socio-economic, and geographical barriers etc. For example, with the growing penetration rates of mobile phones, mobile learning will increasingly become a reality that will benefit students, especially in countries where access to computers is limited due to its high costs. The *SMS Story* mobile reading programme in Papua New Guinea, *LearnEnglish* and *Worldreadermobile* are examples of successful ICT blended programmes (UNESCO, 2014; Ra, S., Chin, B., & Lim, C.P, 2016). Students living in the rural areas of countries like Bangladesh, Cambodia, Indonesia, Myanmar, Laos, Sri Lanka, and Vietnam will benefit from mobile learning insofar as mobile broadband signals are more reliable, available and cost-effective as compared to internet broadband. More importantly, content that is well designed and of high quality can be standardized and delivered via ICT to all. Thus, the use of ICT has the potential to reduce the digital learning divide. Per the recent UNESCO-Commonwealth of Learning (2016) report, Massive Open Online Courses (MOOCs), that are being used in Higher Education should be adapted to expand access to secondary/post-secondary education for all and could play a significant role in providing learning opportunities for those in inaccessible or conflict regions.

Finally, both ICT enabled education and ICT education can improve **the efficiency of education systems.** ICT tools such as Learning Management Systems (LMS) and

MOOCs have been used to collect data on students' learning patterns. The interpretation of such data will allow teachers to adjust teaching pedagogy and for policy makers to make more informed education policies. This is currently underutilized in many developing nations and holds huge promise in improving learning outcomes. In other words, learning analytics can increase the internal efficiency of schools – and thereby education outcomes – by better catering to students' learning strengths and difficulties.

On the other hand, when ICT is both taught as a discrete subject and used as a pedagogical agent, it can increase the external efficiency of education, i.e. its relevance to labour market conditions, as students develop 21st century skills that are in demand today. These refer to the 4Cs - communication, collaboration, creativity, and critical thinking skills *(Figure 2)* as well as digital know-how. Such skills will become increasingly important for the information society and knowledge-based economy in which ICT becomes the nucleus of every industry. Therefore, the need for the integration of ICT in education cannot be stressed enough as it facilitates collaborative learning and higher-order thinking.
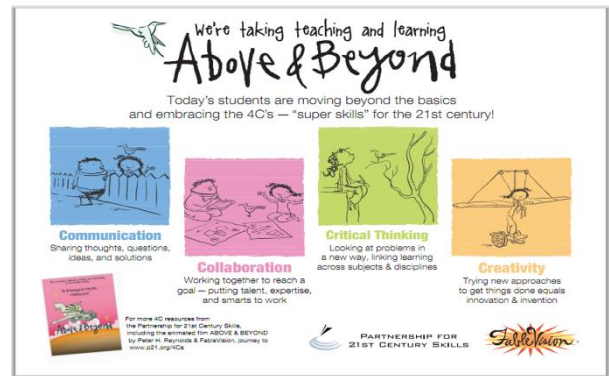

Figure 2: The 4Cs critical in the 21st Century. Retrieved from ww.p21.org/storage/documents/4csposter

B. Progress in Integrating ICT in ASEAN Education

Recognizing the benefits of using ICT to enhance the quality, equity and efficiency of education systems, all ASEAN countries have introduced initiatives to integrate ICT in education. However, as the region is very diverse in terms of economic and educational factors etc., the member countries are at very different stages in their ICT integration process. Based on these different stages, SEAMEO has, in its 2010 report, broadly categorized the 10 member countries into 3 groups *(Figure 3)*. It must be noted that differences exist among the countries within each group as well.
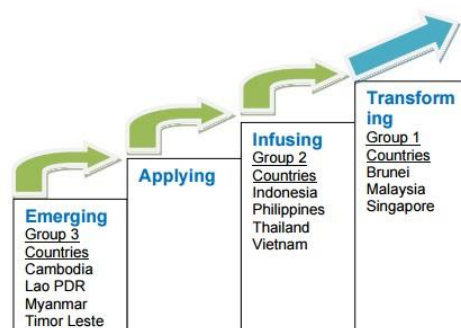

Figure 3: Southeast Asian Countries according to their Stage of ICT Integration in Education (SEAMEO, 2010)

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[2] ICT enabled education refers to content that is purely delivered through ICTs.

[3] ICT education refers to the knowledge transfer and use of ICT to develop digital literacy in students.

Given the duration of time since the 2010 Southeast Asian Ministers of Education (SEAMEO) report and as new and increased efforts have been undertaken by the respective Southeast Asian governments, it is possible that the position of the member countries may have shifted along the 4-stage framework in *Figure 3,* albeit that such changes are likely to be minimal. An up-to-date analysis of the status of ICT integration in education is required. The latest available data from the UNESCO Institute of Statistics (UIS), does however, provide insights into the status of ICT integration in education for the years 2012 and 2014 – based on a few select indicators for policy, technological infrastructure and ICT in curricula.

Almost all the ASEAN member countries have integrated ICT in their national education and ICT Master Plans (Prajaknate, 2015, p.4). According to a report by the UNESCO Institute for Statistics (UIS, 2014), about half of the ASEAN member countries (including Cambodia, Brunei, Singapore) have standalone sector-wide ICT in education plans while the other half (e.g. Indonesia, Myanmar, Thailand and Vietnam) have ICT mentioned within their national education plans.

In terms of the proportion of schools with computer labs, data for the Group 3 countries are largely unavailable for the year 2012. Of the 6 countries for which data is available, i.e. Myanmar, Philippines, Thailand, Malaysia, Singapore, and Brunei, the statistics stands at 5%, 21%, 97%, 72%, 100% and 100% of schools respectively (UNESCO Institute of Statistics). Additionally, the proportion of schools with internet access in the same year can be seen in *Table 1.*

Country	Schools with Internet Access (%)
Cambodia	7
Philippines	12
Indonesia	42
Malaysia	91
Thailand	98
Singapore	100
Brunei	100

Table 1: Proportion of schools with internet access, 2012

Further efforts have also been made to introduce ICT in school curricula. In 2012, all schools in Malaysia, Singapore and Brunei had utilized some form of computer assisted instruction (UIS, 2014). On the other hand, the proportion of schools with computer assisted instruction in Cambodia, Philippines and Thailand was 3%, 49% and 98% respectively.

C. Key Challenges that Continue to Remain in ASEAN

Despite the knowledge of the advantages of using ICT in education, much needs to be done to realize the perceived benefits of ICT in education. The following are key challenges that continue to be highlighted by large international organizations like the Organization for Economic Cooperation and Development (OECD), UNESCO, and the Asian Development Bank (ADB) in the region.

1. **Quality**. There are many gaps that need to be addressed in terms of quality – quality of teachers in the developing nations, quality of student achievement that varies greatly within ASEAN, quality in the delivery of public education across large and diverse nations and finally the quality of school leadership. Education systems can harness the potential of ICT to enhance quality in terms of a systematic way to analyse the learning data gathered to improve student learning outcomes

2. **Equity**. Many challenges with respect to rural-urban, geographical location, socio-economic class, and gender divides still remain as obstacles to equitable access to quality education in some ASEAN countries. Mobile technologies have the potential to address these challenges.

3. **Efficiency.** Internal efficiency: Optimization of resources and use of ICT to improve efficiency at the school level. For example, use of learning analytics data to make informed policies.

   External efficiency: Ensuring relevance of education to societal needs and labour

market conditions; ICT in education is useful in developing 21st Century skills and core competencies in students and lifelong learners.

D. Policy Recommendations

Moving forward, the following are some of the macro policy questions that policy planners in the ASEAN region need to think about while reforming their existing national ICT Policies. It is a fact that the countries in ASEAN are in different stages of development with respect to ICT in education. However, insofar as many in the region aspire towards an "Asian Century" and want to integrate ever more intensively into today's knowledge-based economy, there are clear lessons and questions that all governments should consider. ICTs provide the opportunities for students to develop a set of core competencies where they can learn to think critically, be creative, and collaborate to learn and seek new information and communicate effectively.

1. To be able to meet the demands of the knowledge economy, each developing member country needs to assess its own strengths and capacities to integrate ICT in education. There is a need to mobilize more resources for the integration, research, development, and evaluation of ICTs in education.

2. A holistic approach *(Figure 3 below)* is one that has a well-rounded integration of various dimensions of ICT in education like national ICT policies, infrastructure, teacher capacity-building, ICT in curriculum, and assessment . This is essential if the affordances of ICT policies in education are to be realized in an efficient manner. Are the current national ICT in education policies aligned with the national educational vision? Do the policies include

measurable goals, implementation strategies, a timeframe, and key performance indicators to monitor/evaluate the implementation of the policies? Are all the stakeholders involved in the process? What financial resources are available?
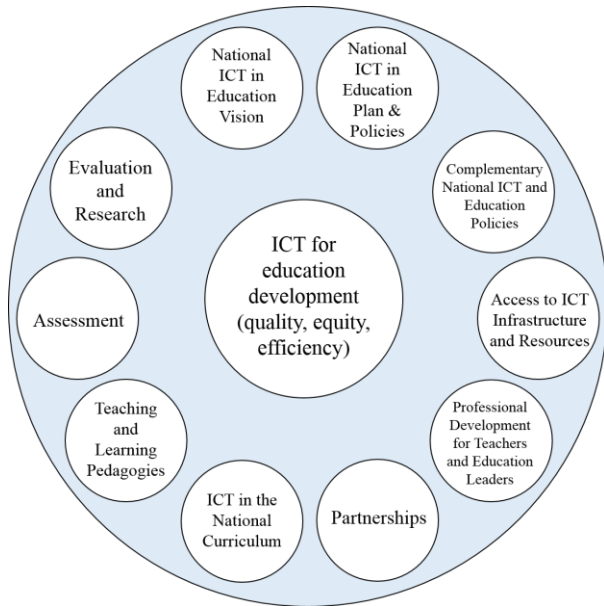

Figure 4: A Holistic Approach Towards ICT in Education (Ra, S., Chin, B., & Lim, C.P (2016)

3. There is no need to reinvent the wheel when it comes to sharing of practices. Documenting and sharing what works within and between countries in the region is crucial for ICT policy formulation and implementation. For example, what can we learn from Singapore's successful ICT MasterPlans? Can they be adapted to other country contexts in rest of ASEAN?

4. It is well-documented that to be able to broaden access as well as implement large-scale initiatives in education involving ICT, driving and creating public-private partnerships are essential. Partnerships could be in terms of how policy makers can create and sustain partnerships to ensure that students have quality education with equitable access to ICT resources for educational purposes. For instance, for the

Malaysian Smart Schools Integrated Solutions (SSIS), there was a partnership between the Malaysian Government and the private sector in development, testing, installation and implementation of the SSIS. The Government set the vision and provided the budget, while the private sector provided their expertise in their area of interest.

5. Professional development for policymakers, school leaders and teachers form a critical component of the holistic approach. ICTs cannot compensate for lack of good pedagogical practices or leadership or ill-drafted policies – Policymakers will need to identify key areas of capacity building (teacher and policy) that are needed to improve ICT integration in education.

6. Finally, it is crucial for governments to make informed actionable decisions based on national level assessment data, interpreting what the data tells in the first instance. A system to periodically evaluate the progress in policy design and implementation is crucial for refining future policies based on the identified obstacles.

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