

E-Learning Readiness In Indonesia: A Case Study In Junior High School Yogyakarta

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Abstract

This paper discusses data from a study examining the e-readiness of Junior High School in Yogyakarta to implement e-learning. The study explores the e-learning readiness including eight components of readiness: psychological readiness, sociological readiness, environmental readiness, human resource readiness, technological skill readiness, financial readiness, equipment readiness and content readiness. It is a quantitative study; the data was collected using questionnaire developed based on the ELR Chapnick model. Analysed using ELR Chapnick model, the data indicate that all participant schools have fairly high score of e-learning readiness in all component of readiness except sociological component which have high score. This implies that these schools are to some extent ready to implement e-learning in teaching and learning processes. The findings of this study contribute to the ongoing work of improving education quality by integrating traditional teaching and learning process and ICT that is done by Ministry of education.

Keywords: e-readiness, e-learning readiness, psychological readiness, sociological readiness, environmental readiness, human resource readiness, technological skill readiness, financial readiness, equipment readiness, content readiness

Introduction

The World Economic Forum in partnership with European Institute of Business Administration (INSEAD) has published the latest report of the Networked Readiness Index (NRI). This report provides an overview of the current state of ICT (information and communication technologies) readiness of each country in this world. This index measured ten pillars of readiness which divided into four sub-indexes, namely: environment, readiness, usage and impact sub-index (see Figure 1 for the NRI structure).

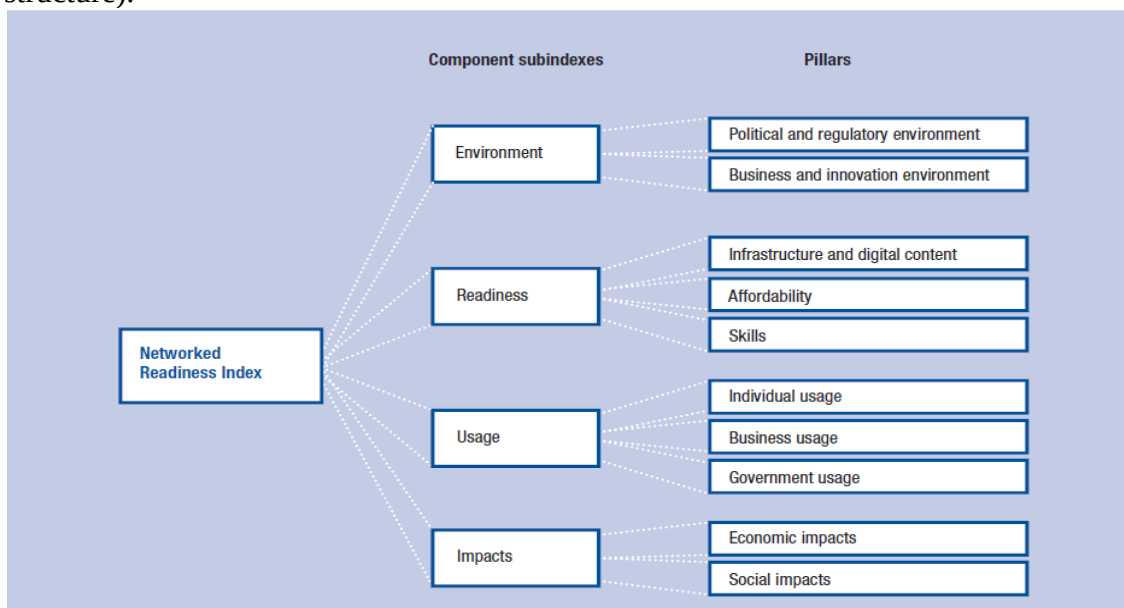


Figure 1: The Networked Readiness Index Structure
 (Sources: The Global Information Technology Report 2014)

According to the Networked Readiness Index (NRI) 2014, Indonesia ranked in the 64th place out of 148 countries. It stepped up 12 places compare to the last year rank, 2013, the 76th out of 144 countries (see Table 1 for the detail result of each pillar). However, this rank is quite down below its neighbourhood countries Singapore in 2nd, Malaysia 30th, Brunei 45th. Within this position, Indonesia's readiness is in the middle point between the best and the worst.

Table 1. Indonesia's Readiness Index by Each Pillar

Pillar	Rank		Point	
	2013	2014	2013	2014
A. Enviroment subindex				
Political and regulatory	82	68	3,57	3.71
Business and innovation	73	62	4,10	4.36
B. Readiness subindex				
Infrastructure and digital content	89	85	3,26	3.58
Affordability	39	37	5,82	6.03
Skills	63	61	4,88	5.16
C. Usage subindex				
Individual usage	92	95	2,74	2.90
Business usage	40	36	3,81	4.03
Government usage	58	49	4,20	4.31
D. Impact subindex				
Economic impact	101	86	2,85	3.07
Social impact	72	63	3,74	3.84

As can be seen in Table 1, affordability is one of the main strengths of Indonesia's readiness along with business usage as many companies quickly absorbing the latest technologies and increasingly integrating ICTs in their daily activities. Table 1 also shows that the biggest improvements occurred in the environment sub-index (political- regulatory, and business-innovation) and the impact sub-index (i.e, economic impact and social impact). The data from the NRI has reported that the improvement in political and regulatory environment is driven by stronger perceptions about the effectiveness of the country's institutions, with enhanced intellectual property protection, a more efficient legal system, and better-developed ICT regulations. Meanwhile, the progress in business environment is mainly driven by venture capital availability, stronger local competition and the greater availability of the latest technologies. Furthermore, economic and social impacts (86th and 63rd, respectively) are increasing but still in the low rank that associate with low competitiveness in innovation of new product and low well-being that result from the environment, education and energy consumption. This report suggests that the readiness can be further enhanced by continuing investing in education and especially in ICT infrastructure, where the capacity of secure Internet servers and electricity production remain insufficient to sustain future ICT development. It further explains that education provides basic ICT skills that will improve the level of readiness or the degree to which the Indonesian society is prepared to make good use of ICT.

ICT in Indonesian Education System

The Indonesian government have been made some programmes in response to the issue of low level of e-readiness. One of the examples is improving society e-readiness through education by implementing new curriculum called “*Kurikulum 2013*”. This new curriculum requires teachers to integrate ICT into every school subject and encourages them to use e-learning system. Before discussing ICT in the new curriculum, it is important to discuss briefly the *Kurikulum 2013*.

Kurikulum 2013 replaces *Kurikulum Tingkat Satuan Pendidikan* (KTSP) that had been implemented for six years. This new curriculum had been tried out in a number of schools in 2013. In 2014, *Kurikulum 2013* has been applied in Elementary School grade I, II, IV, and V, Junior High School grade VII and VIII, and Senior High School grade X and XI. It is expected that *Kurikulum 2013* will be implemented in all levels of schooling by 2015.

In terms of the material or content of learning, some materials in the previous curriculum were diminished such as in Bahasa Indonesia, social science (IPS) and Moral education (PPKN). Consequently, there are new materials added such as in mathematics. The learning materials in *Kurikulum 2013* are matched to the international standards because the Indonesian government try to accelerate the education quality as other countries particularly developed countries.

Kurikulum 2013 has three aspects of assessment namely: knowledge, skills, and attitude-behavior. The knowledge aspect relates to an aspect included in learning contents to enhance student’s knowledge toward certain subject. In *Kurikulum 2013*, the assessment processes in elementary school should consist of 20% for knowledge and 80% for character building. Meanwhile, 40% for knowledge and 60% for character building in Junior High School. These proportions increase in Senior High school, 80% for knowledge and 20% for character building. The assessment of skill aspect is aimed to improve academic skills and characters such as creating, doing or solving problems based on the scientific procedures. Assessment on the attitude-behavior aspect includes the attitude and behavior of the students in relation to the process of teaching and learning. This assessment is based on the daily journal written by the teachers, peer assessment and self-report by the students.

Ministry of Education said that there is integration of some school subjects without cutting out of any subjects in the curriculum in 2013. In *Kurikulum 2013*, ICT subject will be integrated into all subjects (as in government regulation/PP Number 32 Tahun 2013). This means that ICT will be used in every subject so that the students can learn via internet in addition to face-to-face teacher-students interaction in the classroom. The government believe that this integration is important to ensure that all students get access to ICT as well as improve their ICT skills so that they can adjust with the rapid development in the world. In other words, ICT in *Kurikulum 2013* is not only about creating and typing documents, or browsing in the internet but also implementing these skills in learning the content or the material of school subjects. Therefore, the role of ICT teachers is very crucial in the implementation of *Kurikulum 2013*. According to Decree number 68 of the Ministry of Education (*Permendikbud Nomor 68 Tahun 2014*), the role of the ICT teachers in *Kurikulum 2013* are:

1. guiding students in SMP / MTs, SMA / MA, SMK / MAK, or equivalent to achieve competency standards of primary and secondary education,

2. facilitating their peers (other teachers) at SMP/MTs, SMA/MA, SMK/MAK, or equivalent in preparing, implementing and assessing teaching and learning processes using ICT,
3. facilitating staff at SMP/MTs, SMA/MA, SMK/MAK, or equivalent in developing school based ICT system

The ICT teachers also responsible with helping other teachers to search, analyze, store, present and distribute the data or information or learning contents in various ways to enhance teaching and learning processes in every subject.

In the previous curriculum both *Kurikulum Berbasis Kompetensi* (KBK) 2004 and *Kurikulum Tingkat Satuan Pendidikan* (KTSP) 2006, ICT was a compulsory school subject in Secondary School (SMP and SMA) and as an optional subject in Elementary school. Whilst in *Kurikulum 2013* as discussed above, ICT is not a school subject but the ICT skills are integrated in every school subject. According to UNESCO (Figure 2), ICT integration model has two dimensions: technology and pedagogy. Technology refers to all information and communication technology (ICT) and pedagogy refers to the science and art of education. The technology dimension is a continuum which represents increasing number of ICT usage. Pedagogy dimension is also a continuum that embodies the changes in teaching practices as a result of the ICT implementation. Based on these two dimensions, UNESCO suggested four stages of the ICT integration in education system or schools: emerging, applying, infusing and transforming.

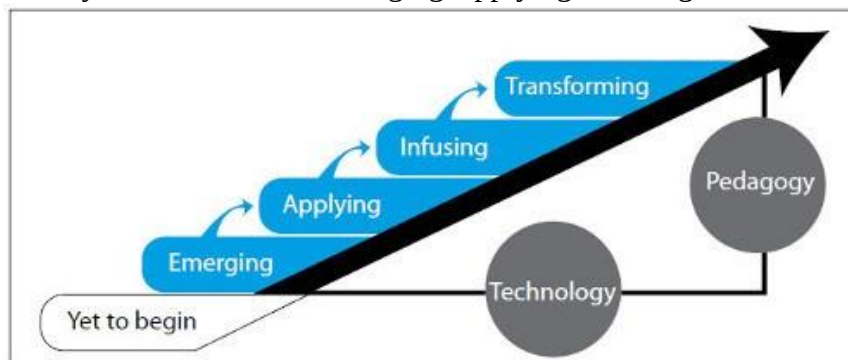


Figure 2. Continuum Model of ICT Integration in Education (UNESCO)

In the context of teaching and learning, UNESCO proposed four stages in relation to how teachers teach with and through ICT and how students learn about ICT. The four stages are emerging, applying, infusing and transforming. In terms of learning about ICT, the emerging stage refers to becoming aware of ICT; applying refers to learning how to use ICT; infusing relates to understanding how and when to use ICT, and transforming relates to specializing in the use of ICT. Meanwhile, teaching with and through ICT can be implementing by applying productivity tools in the emerging stage, enhancing traditional teaching in the applying stage, facilitating learning using multi-modal instruction in the infusing stage, creating and managing innovative and open learning environments in the transforming stage.

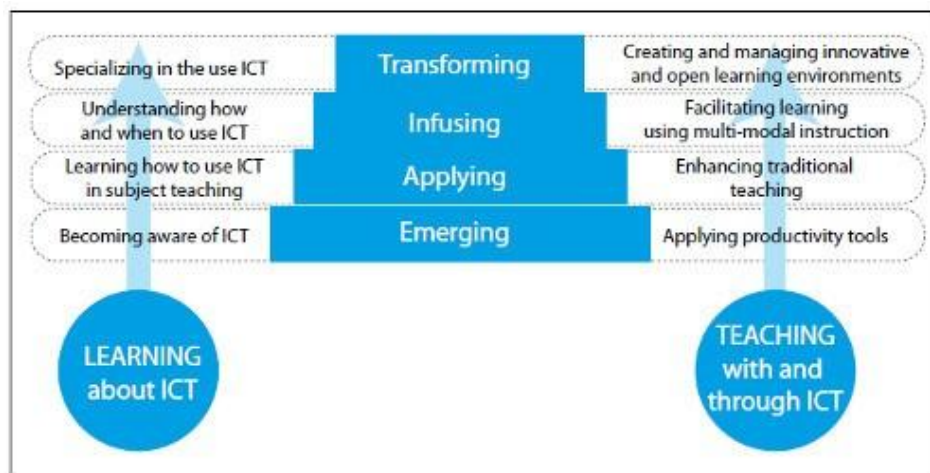


Figure 3. Levels of ICT Implementation in education (UNESCO)

Ministry of Education has build the e-learning system in nine cities in Indonesia, including Yogyakarta. Therefore, the purposes of this study are determine the level of school e-learning readiness and identify the factor that support the implementation of e-learning programme in Junior High School in Yogyakarta.

E-Learning in Schools

E-learning (electronic learning) is one of the aspects of the application of ICT in educational institutions. There is no fixed definition of e-learning implementation at school as a consequent there are various definition of it. E-learning is defined as the delivery of content learning or electronic learning experience using a computer and computer-based media (Smaldino, 2005). Gilbert and Jones in Surjono (2007) define E-learning or electronic learning as presenting learning material through electronic media such as the internet, intranet/extranet, satellite, broadcast, audio/video tape, interactive TV, CDROM, and computer-based training (CBT).

The use of computers and other digital devices together with online learning tools and materials are the prerequisites for e-learning to take place. When digital technologies are successfully integrated with the appropriate pedagogies to meet the objectives of the curriculum, it can be considered that an e-learning process is taken place. Due to advances in technology and availability of good quality online resources the definition of e-learning also incorporates with anytime and anywhere learning, self-directed learning and more personalised learning (National Centre for Technology in Education, 2009)

E-learning provides the necessary environment and appropriate tools for task oriented learning. It also provides up to date information with greater efficiency but at less cost. To introduce e-learning, school should be prepared with proper environment and technological aspects. Adapting e-learning without careful planning most likely ends with cost overruns, unappealing training products, and failure (Chapnick, 2000; Anderson, 2002; Bean, 2003). Furthermore, like any other major innovation, e-learning strategies require considerable such as technological infrastructure and leadership support to be successful (Anderson, 2002; Bean, 2003). Therefore, it becomes critical to assess the readiness of the schools to utilize technology for successful implementation and to meet students' learning strategies.

E-Learning Readiness (ELR)

Borotis and Poulymenakou (2004) define e-learning readiness (ELR) as mental or physical preparedness for that organization for some e-learning experience or action. E-Learning also can be defined as instructional content or learning experiences delivered or enabled by electronic technology (The Commission on Technology and Adult Learning, 2001). E-learning-readiness should be determined before organizations introduce e-learning. Readiness includes learners' ability to adapt to technological challenges, collaborative training and synchronous as well as asynchronous self-paced training. It also depends on their motivation and their discipline to learn in a self-driven mode and to respond to online instructions (Schreurs, 2013).

The ELR model was designed to simplify the process of obtaining the basic information needed to develop e-learning. There are some ELR model have been developed such as Kirkpatrick, eLRI, SORT, RILO and Chapnick model. Kirkpatrick Model was developed by Donald Kirkpatrick (Prayudi, 2009). In this model, Kirkpatrick divided the e-learning evaluation into four levels: Reaction, Knowledge, Behavior and Result. The four evaluation levels describe the output evaluation from institution that has been implemented e-learning. Each level consists of several assessments that reflect each level of output evaluation. Meanwhile, e-learning Readiness Index (eLRI) model is an evaluation model to measure to what extent all aspects that involved in the implementation of e-learning meet the original purposes (Prayudi, 2009). The components of this model are similar to those in the Networked Readiness Index measurement model (NRI).

In terms of the learner's readiness, SORT (Student Online Readiness Tools) model and RILO (Readiness Index for Learning Online) model were developed to measure this aspect. SORT was developed by the University System of Georgia to categorise the readiness of the students in higher education to interact with online system for teaching and learning process (Prayudi, 2009). Likewise, RILO model developed by Indiana University School of Nursing contains several basic questions why the students choose online course.

Chapnick (2000) proposed another model that categorised the readiness into eight groups, namely: psychological readiness, sociological readiness, environmental readiness, human resource readiness, technological skill readiness, financial readiness, equipment readiness, and content readiness. This study use Chapnick framework by looking at eight components of ELR in detail.

a. Psychological readiness

This is one of the important factor to be consider and has highest potential to sabotage e-learning implementation. This readiness take into account the learner's state of mind as one of the factors that affect the outcome of e-learning.

b. Sociological readiness.

This includes the interpersonal aspect of environment in which e-learning will be implemented.

c. Environmental readiness

This aspect considers the large-scale forces operating on the stakeholders both inside and outside the organization.

d. Human resource readiness

This includes the availability and design of the human support system.

- e. Financial readiness
This factor considers the budget size and allocation process.
- f. Technological skill (aptitude) readiness
This factor considers observable and measurable technological competencies.
- g. Equipment readiness
This relates to the availability of the proper equipments.
- h. Content readiness
Faktor ini mempertimbangkan konten pembelajaran dan sasaran pembelajaran.

Methods

Using purposive random sampling, 40 schools in the city of Yogyakarta participated in this study (16 public schools and 24 private schools). The data of this study was collected using questionnaire. The questionnaire developed from the Chapnick model.

Findings and Discussion

This study explored the e-learning readiness of a sample of schools drawn from 40 Junior High schools in Yogyakarta. In general, the results revealed that schools had an above-average level of e-learning readiness. Within a proposed range of 8.50 to 18 (Table 2) by Chapnick's conversion score (2000) this score implies that the school participants are ready to integrate ICT or to implement e-learning in teaching and learning processes.

Tabel 2. E-Readiness of the Junior High Schools in Yogyakarta

Category	Score	Level of Readiness
Psychological readiness	16.96	About ready
Sociological readiness	12.72	Ready
Environmental readiness	17.33	About ready
Human resource readiness	8.53	About ready
Financial readiness	8.70	About ready
Technological skill readiness	14.81	About ready
Equipment readiness	17.82	About ready
Content readiness	18.00	About ready
Total	114.87	About ready

Table 2 also points out that social readiness has the highest score compare to the other categories. According to Chapnick's conversion score, the social or interpersonal aspect of school environment is ready to implement e-learning. Meanwhile, the secondary schools in Yogyakarta have fairly ready for the other categories, i.e. psychological readiness, environmental readiness, human resource readiness, financial readiness, technological skill readiness, equipment readiness, and content readiness.

Priyanto (2008) argues that the implementaion of e-learning should also take into accunt three aspetcs: technology infrastructure, human resources and enviroment.

Technology infrastructure consists of hardware and software. Hardware includes the availability of computers, intranet, and the internet connection. Learning Management System (LMS) is one of the main software for e-learning that is designed to handle the process of communication between faculty and students in the learning process. It requires administrators who provide technical services to deal with the system. The data of this study imply that all school participants have about ready in these three aspects, hence it can be conclude that all schools participants about ready to implement e-learning. However, there are several points need to be consider before implementing e-learning in these schools as Tarigan (2009) suggests that teachers, students, school management, government, parents and society are the main parts that determine the success of e-learning implementation (Figure 4). This study, however, does not provide the information about teacher's readiness, student's readiness and parent's readiness. Therefore, further research on these is needed to fully recognize the school readiness in Yogyakarta before implementing e-learning.

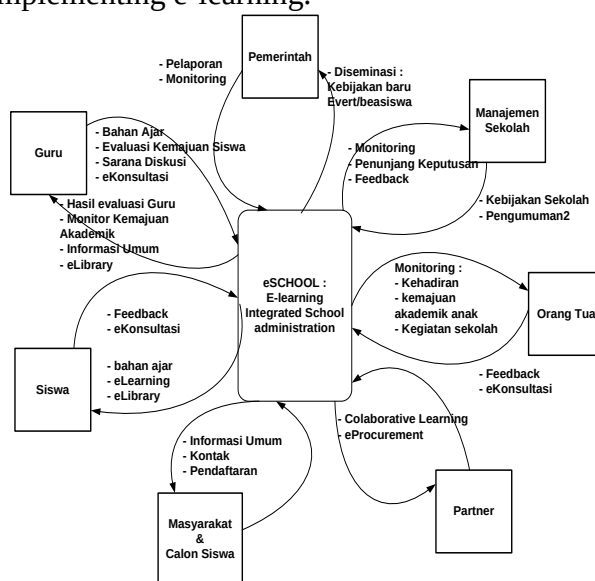


Figure 4. Stakeholders in eSchool Implementation

Conclusion

The implementation of e-learning is not a simple process; it involves many factors such as technology infrastructure, human resources and social environment. Chapnick model of *e-learning readiness* takes into account these factors. It measured the readiness of all aspects in the organisation to implement e-learning. It also provides information about the strength and the weakness of each aspect so that we can determine the aspect that need to be improved.

The data of this study indicate that the school participants have reach a level of readiness in all aspect of Chapnick model. This implies that junior high schools in Yogyakarta are ready to implement e-learning in teaching and learning processes.

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