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Building Quality Education through Integrating ICT in Schools: Teachers' Attitudes, Perception, and Barriers

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Abstract

Information and Communication Technology (ICT) integration has significant impacts and many barriers in the 21st-century education. This mixed method study aimed at analyzing teachers' attitudes and perceptions toward the integration of ICT in the teaching and learning processes in the schools of Indonesian rural areas and its barriers. We applied a-mix method study with two phases of data collection, survey and focus group discussion. The respondents of this research were 234 teachers for the survey and 23 participants for a focus group discussion. We used a mean and standard deviation in the data analysis of the survey. Meanwhile, the data from the FDG were transcribed, translated, coded, analyzed, and elaborated. The findings exposed the attitudes and perceptions of teachers in schools of Indonesian of rural areas toward the integration of ICT in education and the integration barriers. Implication and policy recommendations are offered for the betterment of Indonesian educational system.

Keywords: *ICT in schools; quality education; rural schools.*

1. Introduction

Information and Communication Technology (ICT) has a very important role in the 21st-century education. The application of ICT worldwide is often hypothesized to be a potential equipment to revolutionarily change the system of education which sometimes outdated, develop the way of teaching and learning, and establish education betterment efforts (Aduwa-Ogiegbaen & Iyamu, 2005; Bullock, 2004; Kersaint, Horton, Stohl, & Garofalo, 2003; Pelgrum, 2001). In developed countries, the use of ICT has been an important issue in the past years. Currently, the governments of those countries are in the race on investing their national budgets on educational ICT, for instance, some countries are buying one laptop for one student on their primary and secondary schools (Balanskat et al., 2006; Chung, 2011). However, some developing countries are still struggling in the ICT implementation (Aduwa-Ogiegbaen & Iyamu, 2005; Albirini, 2006; Benzie, 1995; Sobaih et al., 2016; Pelgrum, 2001; Rogers, 1995). In responding the situation, governments in many developing countries have started to initiate national programs to introduce new tools such as computers, laptops, projectors, and internet accesses into their educational program. As a result, they have generated their burden on their national budget to education (Benzie, 1995). Further, it is indicated that some national programs have been of limited success not only because they were formulated in non-educational realms, but also because they were not research-based programs (Aduwa-Ogiegbaen & Iyamu, 2005; Albirini, 2006; Rogers, 1995).

ICT entails the whole range of electronic devices (Anderson, 2010) such as laptops, computers, electronic pads, and smartphones along with the broadband Internet, interactive Web 2.0 technologies and cloud applications. Facilitating teachers and students with the use of ICT composes major educational program elements; infrastructures, environment, and human resources (Claro, Nussbaum, López, & Contardo, 2017; Thomas & Stratton, 2006). Regardless of the amount of technology, its sophistication, and supporting environment, it will not be maximally utilized, should human resources; administration staff, teachers, and students do not possess the skills, knowledge, and attitudes necessary to infuse it into the curriculum (e.g., Al-Ruz & Khasawneh, 2011; Baylor & Ritchie,2002; Fu, 2013; Haji, Moluayonge, & Park, 2017; Lin, Wang, & Lin, 2012; Srivastava et al., 2014; Yang, & Kwok, 2017). In dispersion through those elements, studies about teachers attitudes toward the use of technology could have significant impacts on teaching and learning process in the classroom (e.g., Albirini, 2006; Ang'ondi's, 2013; Bullock, 2004; Ertmer, et al, 2012; Kersaint, Horton, Stohl, & Garofalo, 2003; Koohang, 1989; Malagón & Pérez, 2017; Ndibalema, 2014; Watson, 1998; Woodrow, 1992). In an early study on ICT integration, Koohang (1989) informed that teachers' attitudes toward ICT are main elements related to the initial and future acceptance of ICT. This informs that studies at the beginning of technology integration should be in the center of users' attitudes. This study was in line with this concept.

Indonesia, a developing country located in Southeast Asia, through its Ministry of Education and Culture, MOEC, is now trying to develop the ICT integration in educational system (MOEC, 2013). Embracing the 21st education, MOEC recently addresses a national plan to equip all schools with ICT tools; computer labs, projectors, laptops, and internet connections. The integration of ICT in Indonesian schools in big cities has been objects of few studies (Hadiyanto et al., 2017; Prasojo et al., 2017). However, the studies of technology application of schools in Indonesian rural areas have yet to be found although schools in these Indonesian areas have been equipped with

technology facilities such as computers, projectors, and some of the schools equipped with the internet access. We conducted research, which aimed at determining Indonesian high school teachers' attitudes toward ICT in Indonesian rural areas. We also presented the teacher's perception of some elements influencing their attitudes toward ICT. This research also aimed at revealing barriers encountered during the integration of ICT. This research was guided by the following questions: (1) What are the attitudes and perceptions of high school teachers in Indonesian rural areas toward the integration of ICT in education? and (2). What barriers are found in the ICT integration?

2. Literature review

2.1. ICT in education

ICT skills are important for individuals in every area of life including education (Yilmaz, 2011). Information and Communication Technology plays significant effects in global education in the 21st century (Thomas & Stratton, 2006). Many researchers has been promoting the use of ICT as a platform to support the process of teaching and learning in education (eg., Bullock, 2004; Hack, 2013; Prasojo et al., 2107; Karabenick, 2011; Kersaint, Tondeur, van Braak, & Valcke, 2007; Yilmaz, 2011; Tambouris et al., 2012). Tambouris et al., (2012) informed that the integration of ICT in the process teaching and learning made the students to be more active, collaborative, and productive. In other study, Hack (2013) has also stated that the use of Web 2.0 that is from of ICT can provide the tutor or facilitator with an opportunity to scaffold and assess the efficient process in teaching and learning. Prasojo et al., (2017) informed that internet and social media are nowadays very important to support teaching and learning process in Indonesian higher education. In changing the style of teaching, the establishment of ICT integration has changed the shifting of how teachers teach, from traditional to be advance ways of teaching (Tondeur, van Braak, & Valcke, 2007). Within the context of a knowledge society, teachers and schools recently keep making the integration of ICT as a system to poster students skills and to encourage independent learning strategies among them (Anderson, 2010; Karabenick, 2011). In brief, ICT helps the users accumulate, reserve, retrieve, process, analyze, validate, and transmit information and communication in a simple way.

2.2. Benefits and teachers' attitudes toward ICT

ICT has the potential to foster the system of education of one country (enhancing students; roles, aiding to create learning with collaboration, establishing teachers, creativity, and simplifying the process of teaching and learning). The potential of the integration depends on many supporting elements; policy, infrastructure, human resources, and finance (Abedalaziz, Jamaluddin, & Leng, 2013; Al-Ruz & Khasawneh, 2011; Balanskat et al., 2006; Baylor & Ritchie, 2002; Chung, 2011; Fu, 2013; Lin, Wang, & Lin, 2012; Srivastava et al., 2014; Yang, & Kwok, 2017; Haji, Moluayonge, & Park, 2017).

Among the supporting elements, teachers attitudes plays an essential role (Woodrow, 1992; Watson, 1998; Kersaint, Horton, Stohl, & Garofalo, 2003; Bullock, 2004; Ertmer, et al, 2012; Albirini, 2006; Ang'ondi's, 2013; Ndibalema, 2014; Malagón & Pérez, 2017). Woodrow (1992) affirmed that the success of educational practice transformation needs the establishment of appreciative attitudes from the users toward the novel technology. Watson (1998) affirmed the establishment by revealing that it is a key factor for teachers both in increasing the integration of computer and in reducing the resistance of computers Watson (1998) affirmed the establishment by revealing that it is a key factor for teachers both in increasing the integration of computer and in reducing the resistance of computers. He said "the teacher is an empty vessel into which this externally defined innovation must be poured" (Watson, 1998, p. 191). A study conducted in 2003 by Kersaint, Horton, Stohl, and Garofalo revealed that with positive attitudes toward ICT, teachers would have a comfortable feeling when using it and integrating it into their teaching activities. Likewise, Bullock (2004) informed that the attitudes of teachers is a main allowing / disallowing element in technology integration. Ertmer, et al. (2012) cited Marcinkiewicz (1993, p.234) "full integration of computers into the educational system is a distant goal unless there is reconciliation between teachers and computers. To understand how to achieve integration, we need to study teachers and what makes them use ICT". Malagón & Pérez, (2017) informed that the vast majority of teachers perceived that ICT has played important roles for education in general. In some developing countries, the attitudes of teachers toward ICT are also positive. Ndibalema's (2014) conducted research on ICT attitudes of secondary school teachers in Tanzania and Ang'ondi's (2013) research on teachers in Kenya informed the teacher's positive attitudes toward ICT integration in teaching. Likewise, other research in other developing countries also informed teachers' positive attitudes toward ICT (Albirini, 2006 in Syria; Abedalaziz, Jamaluddin, & Leng, 2013 in Malaysia; Al-Zaidiyeen et al., 2010 in Jordania).

2.3. ICT in developing countries and the integration barriers

Providing access to Information and Communication Technology (ICT) comprises many essential elements in education programs of many countries around the world (Thomas & Stratton, 2006). As a result, the educational institutions of many industrialized and developed countries are well-equipped by the government with the facilities to hold technology-mediated teaching and learning (Abedalaziz, Jamaluddin, & Leng, 2013; Balanskat et al., 2006; Chung, 2011). A pan-European academic review informed that ICT have positive impacts, particularly on European countries' primary education (Balanskat et al., 2006). Master plans of ICT for schools (1999–2014) were established and applied by Singapore's Ministry of Education to develop and reform the environment of teaching and learning and equip students with the critical competencies and dispositions to succeed in academic life (Chung, 2011).

Although the integration of ICT has been well-implemented in developed countries, it has also been an integral part in some educational systems of some developing countries (Benzie, 1995; E.Sobaih et al., 2016; Ihmeideh, 2009; Pelgrum, 2001; Rogers, 1995). Some developing countries have experienced the benefits of the integration as an innovative and effective tool for teaching and learning (E.Sobaih et al., 2016). Indonesia as one of developing countries spends 20% of its state budget or $ 34 billion on education. Although the government has spent that big amount of money, many schools in Indonesia are still lack of ICT facilities (Sofwan & Habibi, 2016).

Some barriers informed by research on ICT integration are culture, infrastructure, and human resource (Pelgrum, 2001; Ihmeideh, 2009; E.Sobaih et al., 2016; Aduwa-Ogiegbaen & Iyamu, 2005; Claro, Nussbaum, López, & Contardo, 2017). The educational institution must have been equipped with the facilities to hold ICT-based teaching and learning (Abedalaziz, Jamaluddin, & Leng, 2013 & Chung, 2011). The environment should be appropriate in supporting ICT as the new resource within the school context (Claro, Nussbaum, López, & Contardo, 2017).

3. Methodology

3.1. Research sites and participants

This study aimed at analyzing teachers' attitudes and perceptions toward the integration of ICT in the teaching and

learning process in the schools of Indonesian rural areas and its barriers. We used mix- method study to fulfill the aim of the study (Creswell, 2003; Johnson and Christensen, 2008; Mukminin et al., 2017). The target population of this research covered all high school teachers in Indonesian rural areas in Jambi, one of Indonesian provinces. We used random sampling technique where fifteen high schools were the samples of this research. We evaluated the category of the sampled schools with the help of two population experts (Doctor of Philosophy from Jambi Research and Regional Development Agency, JRRDA).

3.2. Data collection

There were two phases of data collection applied in this study, a survey and two focus group discussions (FGDs). The respondents of this research were 234 teachers for the survey and 23 participants for the FGDs. The first phase was the quantitative phase. In the quantitative phase, we distributed a questionnaire developed in order to have the information required to answer the research questions. Rather than using available instruments, the questionnaire establishment was led and guided by comprehensive review of previous literatures (Woodrow, 1992; Watson, 1998; Kersaint, Horton, Stohl, & Garofalo, 2003; Bullock, 2004; Albirini, 2006; Ertmer et al., 2012; Ang'ondi's, 2013; Ndibalema, 2014; Malagón & Pérez, 2017). The questionnaire instruments were validated by experts from two institutions, Jambi University and JRRDA for content and face validity. Feedbacks from the experts were utilized to assure the appropriateness of the content and context of the study. We refer the ICT to computers and their attributes along with other supporting equipment. Some schools have internet access which is also our concern. In addition, we provide explanation over all terms and condition prior to the questionnaire distribution and the FGDs meetings.

The questionnaire consisted of 16 statements; attitudes toward ICT (5), perceived easiness (6), and perceived usefulness (5). We asked the respondents to respond to each statement represented by a Likert scale, 1 (Strongly Disagree, SD), 2 (Disagree), 3(Neutral), 4 (Agree), 5 (Strongly Agree). The statements were in Indonesian language and translated into English for the elaboration of the data. In the end part of the questionnaire, we provided a question confirming the availability of the respondents to participate in the FGDs, second phase. In the second phase, two FGDs were held in the office meeting of JRRDA for approximately 180 minutes. As previously mentioned, we asked the respondents in the quantitative phase to confirm whether they would like to join the FGDs. As a result, 28 respondents agreed to participate in the FGD sessions. However, only 23 participants could attend the discussion. The discussion aimed at further elaborating the views of the participants to get more in-depth information on the same core strand or dimension as on the questionnaire statements; attitudes toward ICT, perceived easiness, and perceived usefulness. Further, in the FGDs, some barriers to the ICT integration were also revealed.

3.3. Data analysis

The data analysis and elaboration were conducted in two phases, quantitative and qualitative. In the first phase, we performed statistical analysis by involving mean and standard deviation. We further elaborated the data by showing the statistical data and descriptively presented them. In the qualitative phase, we analyzed the data by using an across and between analysis. We analyzed the data with equal manners although the participants' background and experience varied. We computerized the data, printed, read and re-read or examined for connections and redundancies, translated and coded manually, and divided them into themes (Prasojo et al., 2017; Mukiminin, et al., 2017; Habibi et al., 2018). In relation to the research purposes, we focused on the topic related to the questionnaire statements. However, some barriers on the ICT integration were crucial to elaborate. As we discussed the data analysis, we decided to elaborate the barrier and present the result in this paper.

4. Results

4.1. Demographic data

The survey respondents and focus group discussion (FGD) participants in this study were teachers from 15 senior high schools categorized as schools in rural areas from two regions of Indonesia. They were invited to respond to a number of items asking for demographic information and professional history namely gender, age, educational attainment, training on ICT, teaching length of service, and academic position in order to better describe the sample for both the survey and the FGDs. Data from these questions are summarized in the Table below.

Variables	Sub-variable	The respondents (n. 234)	The participants (n. 23) Teacher 1 (T1)- Teacher (T23)
		F (%)	F (%)
Gender	Male	73 (31.2%)	7 (30.4 %)
	Female	161 (68.8%)	16 (69.6%)
Age	20-29 Years	23 (10.3%)	6 (26.1%)
	30-39 Years	72 (30.3%)	7 (30.4%)
	40-49 Years	101 (43.2%)	8 (34.8%)
	50 Years and above	38 (16.2%)	2 (8.7%)
Educational attainment	Lower than bachelors' degree	0 (0%)	0 (0%)
	Bachelor's degree	218 (84.6%)	19 (82.6%)
	Master's degree	16 (15.4%)	4 (17.4%)
Training on ICT	No training	212 (90.65)	12 (52.2%)
	1-2	20 (59.4)	11 (47.8%)
	3-4	2 (0.85%)	0 (0%)
Length of service (Years)	1-10 Years	50 (20.1)	8 (34.8%)
	11-20 Years	77 (49.1)	7 (30.4%)
	21-30 Years	86 (36.8)	7 (30.4%)
	31-40 Years	21 (9%)	1 (4.3%)
Academic position/rank	Government official teachers	208 (88.9)	20 (87%)
	Part time teachers	26 (11.1%)	3 (13%)

Table 1. Participant demographic data

4.2. Attitudes

Mean of the statements from each item varies from low (2.66) to moderate (3.45). The mean of item 4 and 5 with the statements "I like the idea of ICT integration" and "I want to learn more to integrate" was above 3 (item 4; mean= 3.23; SD= 0.921) and (item 5; mean=3.45, SD=0.873). However, the mean of item 1, 2, and 3 with statements "Teaching and learning are more fun with the use of ICT", "Using ICT does not intimidate me", and "Working with ICT comforts me" are under 3 (item 1; mean 2.70; SD=0.990). The combined mean for this part was 3.25.

Item	Statements	n	M	Std. Deviation
	Teaching and learning are more fun with the use of ICT	233	3.21	0.990
	Using ICT does not intimidate me	233	2.66	1.121
	Working with ICT comforts me	234	2.67	1.121
	I like the idea of ICT integration	232	3.73	0.821
	I want to learn more to integrate ICT in class.	234	4.01	0.792
Combined mean			3.25	

Table 2. Attitudes

The participants in the group discussion were asked similar topics as the survey items. For the attitude, the majority of the participants stated that they agreed with the ICT integration and wanted to learn more. However, they felt intimidated by the integration due to lack of experience and skill. These quotations represent their opinions:

- I couldn't agree more with the idea of ICT integration in education. The world changes and everyone on this age has been connected with the ICT and the students are digital natives. So, I want to learn more to adapt although I am 46. (T20, 46)
- It is right that we agree on the integration of ICT in education. However, I assume that many teachers have the same experience as I have. We felt threatened and intimidated with that because we have limitations in terms of skills and experience. Hope the authorities keep their eyes open on the problems, especially with teachers working in rural areas. (T18, 42)

4.3. Perceived Easiness

All responses for the perceived easiness of ICT integration in teaching and learning process are low ranging from 2.48 to 2.63. The mean score of the statement; "ICT is easy to use" (mean= 2.63; SD 1.105), "ICT interaction is clear and comprehensible" (mean= 2.67, SD= 1.105), "access to ICT is not complicated" (mean= 2.57, SD= 1.058), "interacting with ICT does not need a lot of effort" (mean 2.48; SD= 1.106), "I am confident when I teach using ICT" (mean= 2.51; SD= 1.141), and "Learning ICT does not make much effort" (mean= 2.52; SD= 1.099).

Item	Statements	n	M	Std. Dev.
1.	ICT is easy to use	234	2.63	1.085
2.	ICT interaction is clear and comprehensible	234	2.67	1.105
3.	Access to ICT is not complicated	234	2.57	1.058
4.	Interacting with ICT does not need a lot of effort	233	2.48	1.106
5.	I am confident when I teach using ICT	234	2.51	1.141
6.	Learning ICT does not make much effort	233	2.52	1.099
Combined mean			2.56	

Table 3. Perceived Easiness

Responding to the questions concerning the perceived easiness in using ICT in the teaching and learning process, the participants of the group discussion session informed similar results as the survey revealed. Their concerns are likely on their self-efficacy, skill and experience, and infrastructure. The following thematic quotations are representative of the views expressed in the FGDs:

- Computer and its supporting tools are not easy to use. As a senior teacher, I have many weaknesses on operating the tools. (T23, 57)
- Of the use of ICT, computer and other tools, I don't have any sufficient skills and experience regarding the use of it in the teaching and learning process. They [the government] should concern on these matters by providing training and workshops on ICT. (T17, 45)
- The school is far away from the city center causing lack of the effectiveness of ICT integration. Electric stability, lack of ICT facility, and cost are the main things that should be considered. I am bit frustrated with this infrastructure. (T4, 37)

However, some comments from the young-aged participants expressed the perceived easiness of using ICT in positive ways. Some of the comments relating to self-efficacy, skill, and experience are presented in some of these quotations:

- I have some different opinions regarding to the use of ICT. Computer, for example, is easy to use and very important to make things more efficient and I believe that I can learn new things from the use of ICT. (T1, 24)
- As a young teacher and fresh graduate, I am accustomed to using all ICT stuffs like internet, computer, printing machine, and projector. There is no problem at all using those tools. (T3, 25)

4.4. Perceived Usefulness

Even though most respondents in the survey disagreed with the statement in the perceived easiness of ICT use, they had positive responses to the usefulness of ICT for the teaching and learning process. The means ranged from 3.63 to 4.05. The mean of the first statement "ICT improve the effectiveness of teaching and learning" was 3.75 (SD= 0.943). The mean of the second statement "ICT improve the productivity of teaching and learning" was 3.86 (SD= 1.289). The mean of the statement "ICT save more time" was 3.61 (0.388). The mean of the fourth statement was 4.05 (SD= 0.820). The mean of the fifth statement "ICT improve student learning in general" was 4.04 (SD= 0.828).

Item	Statement	N	M	Std.
1.	ICT improve the effectiveness of teaching and learning	234	3.75	0.934
2.	ICT improve the productivity of teaching and learning	233	3.86	1.289
3.	ICT save more time	234	3.61	0.833
4.	ICT help me learn new things	232	4.05	0.820
5.	ICT improve student learning in general	232	4.04	0.828
Combined mean			3.86	

Table 4. Perceived usefulness of ICT

In the group discussion, the participants were asked about their perceived usefulness of ICT in education. The responses revealed by the participants are similar to the result of the survey. Some participants informed that ICT can be a factor supporting the teaching and learning process in terms of time efficiency, teaching and learning effectiveness, and productivity improvement. Three participants had their opinions and thoughts:

- Although I don't have good skills in using computer, projector, and other supporting tools, I believe that those can improve the effectiveness of the teaching and learning process due to their function and usefulness. (T19, 45)
- I have children at home who use computer and smartphone on daily basis. Being in digital era, all tools have been penetrating to all areas including our area the students will surely improve their productivity in learning. (T15, 42)
- Even though, our school in a rural area, internet access is accessible in some parts of the area. I think all students have a smartphone and the situation help us make the teaching and learning more efficient through the use of internet to look for information. (T5, 28)

5. Discussion

The study was aimed to answer two guiding questions; (1) what are the attitudes and perceptions of high school teachers in Indonesian rural areas toward the integration of ICT in education? (2) what barriers are found in the ICT integration? Overall, the findings of qualitative data supported the findings of quantitative data. The findings of the study are consistent with

the findings of some previous studies (Davis, Bagozzi, & Warshaw, 1989; Hu et al., 2003; Yang & Kwok, 2017) where perceived easiness and usefulness of ICT integration are the important factors determining the attitude toward ICT integration.

The low mean score of the perceived easiness of ICT corroborated with the two attitudes statements in the survey ("Using ICT does not intimidate me" & "Working with ICT comforts me"). Meanwhile, the mean score of the perceived usefulness of ICT in education corroborated with the other three attitude statements ("I like the idea of ICT integration" & "I want to learn more to integrate ICT in class"). These findings indicate that even though most teachers agree with the usefulness of ICT to support teaching and learning process in education, they have lack of skills of ICT use and feel intimidated by the integration. The perceived usefulness include time efficiency, teaching and learning effectiveness, and productivity improvement which reflects the findings from Srivastava et al., (2014), Barak and Ziv (2013) Shroff, Deneen, and Ng (2011), Edmunds, Thorpe, and Conole (2012).

The perceived usefulness of ICT in education have been supported by many researchers (Al-Ruz & Khasawneh, 2011; Baylor & Ritchie, 2002; Fu, 2013; Haji, Moluayonge, & Park, 2017; Lin, Wang, & Lin, 2012; Srivastava et al., 2014; Yang, & Kwok, 2017). Similarly, the verbatim results of these study qualitative data show similar findings where the majority of the participants agreed on the positive uses of the ICT in education. One of the participants stated that although he had no good skills in using a computer, projector, and other supporting tools, he believed that those would improve the effectiveness of the teaching and learning process due to their function and usefulness. From the group discussion, it is further revealed that some of the participants working in schools of Indonesian rural areas have has access to the internet as part of Information and Communication Technology in some spots of the areas to support a better educational system (Aduwa-Ogiegbaen & Iyamu, 2005; Bullock, 2004; Kersaint, Horton, Stohl, & Garofalo, 2003; Pelgrum, 2001).

The barriers informed in the group discussion including teachers' skills and experience. T 17 said in the discussion that he did not have any sufficient skills and experience regarding the use of ICT in the teaching and learning process and suggested the government should have more concern. Schools' electric stability, lack of ICT facility, cost were also mentioned which represented by one of the participant's statements "Electric stability, lack of ICT facility, and cost are the main things that should be considered. I am a bit frustrated with this infrastructure". The findings on the barriers of ICT integration are consistent with the previous studies (Pelgrum, 2001; Ihmeideh, 2009; E.Sobaih et al., 2016; Aduwa-Ogiegbaen & Iyamu, 2005; Claro, Nussbaum, López, & Contardo, 2017).

6. Conclusion and Policy Implications

Indonesian authorities should evaluate their policy on ICT integration in schools located in rural areas. Even though the vast majority of the teachers of these schools had positive attitude and perception on the usefulness of ICT, they informed that they had barriers in using ICT especially senior teachers. Therefore, they suggested the authority to provide teachers with sufficient facilities, supporting cost, and eligible training. ICT integration in education is unavoidable even for the schools in rural areas since the rapid development and penetration of technological devices have been significant not only in big cities but also in rural areas.

ICT integration in education delivers a dynamic environment in the teaching and learning process. Many countries invested in the ICT to improve their quality of education. Teachers are the central figure that will determine the success of ICT integration in the schools. Attention to the teachers on the field should be brought to practice and research. Evaluation, analysis, and development should be maintained in order to keep the integration on the tracks. In addition, training, conferences, seminars, and workshops are should be held to improve teachers' skills and experience for the betterment of IC integration. The concentration of both acts should be balanced in terms of areas, schools in cities and rural areas.

In the present study, we exposed the attitudes and perceptions of high school teachers in Indonesian rural areas toward the integration of ICT in education and the barriers are on the ICT integration. In general, the teachers in this research agreed with the usefulness of ICT. However, they had negative attitudes and perceptions on the perceived easiness of ICT. Those factors influenced the attitudes toward the ICT integration. The barriers informed in this research are also important to understand. Teachers' skills and experience as well as schools' electric stability, lack of ICT facility, cost are things that should be overcome by all stakeholders; schools, teachers, student parents, and especially the Indonesian educational authority.

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