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EXPLORING TEACHER PERCEPTIONS AND MOTIVATIONS TO ICT USE IN LEARNING ACTIVITIES IN INDONESIA

Mahdum Mahdum*	University of Riau, Pekanbaru, Indonesia	mahdum.edu@gmail.com
Hadriana Hadriana	University of Riau, Pekanbaru, Indonesia	hadriana@lecturer.unri.ac.id
Maria Safriyanti	University of Riau, Pekanbaru, Indonesia	maria.safriyanti@yahoo.com

* Corresponding author

ABSTRACT

Aim/Purpose	This study aims to investigate the perceptions and motivations of state senior high school teachers in rural districts in Indonesia towards ICT use in learning activities.
Background	In 2013, Indonesian government launched an ICT-based curriculum known as 2013 Curriculum. According to this curriculum, ICT must be integrated into all subjects as learning resources and media. Even though there are growing numbers of research investigating teacher perceptions and motivation to ICT use in teaching and learning process, little has focused on teachers in rural districts in Indonesia. Research on ICT use in education in Indonesia generally focuses on teachers in urban areas.
Methodology	The data of this study were collected through a set of questionnaires administered to 616 senior high school teachers from four rural districts in Indonesia. The questionnaire reliability was analyzed using the Cronbach Alpha with the help of SPSS software. The percentage was mainly used in the descriptive analysis. Whereas, Mann-Whitney U-test was used for inferential statistics as the data were not normally distributed.
Contribution	Even though this study has limitation related to sample size, the results contribute to the existing theory and practice related to ICT integration in Indonesia. This study could be an incentive for improving readiness of teachers in rural areas regarding ICT use in learning activities.

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Findings	The results of this study indicated that the teachers had a good level of perception and motivation toward ICT integration in learning activities. However, they still faced with several issues related to facilities and technical expertise.
Recommendations for Practitioners	The school principals together with related parties in the Education Office have to work together in designing IT training programs for teachers so that they have more knowledge and skills related to the use of ICT in teaching and learning activities and at the same time they can increase their confidence in using ICT. The government as a policy-maker should provide financial support for the schools to adequately provide ICT equipment needed in schools, as well as to prepare the necessary facilities and infrastructure.
Recommendations for Researchers	In terms of ICT use in learning activities, more research needs to be done on the relationship between the use of ICT and students' attainment in rural districts context.
Impact on Society	This study suggests that teachers in rural districts in Indonesia have good perceptions of ICT integration in learning activities. However, to apply ICT-based curriculum as expected by the government, it is important for teachers to continue improving their ability and enriching their knowledge related to the use of ICT through training, both held by schools or other institutions so that teachers can vary their teaching methods or teaching strategies.
Future Research	Further research may address how the use of ICT in learning activities affects students' attainment in rural district context.

Keywords	perception, motivation, teachers, Indonesia, ICT use, 2013 curriculum

INTRODUCTION

The use of ICT in secondary education in Indonesia began to develop rapidly in 2004 marked by the existence of a new subject called Information and Communication Technology in the *2004 Curriculum*. This subject had to be taught to students of junior and senior high school with the goal to optimize their skills. However, in 2013 the government launched an ICT-based curriculum popularly known as the *2013 Curriculum*. According to this curriculum, ICT is no longer treated as a subject but it must be integrated into all subjects and used as learning resources and learning media. Thus, the use of ICT becomes a necessity in the *2013 Curriculum*. The policy on the utilization of ICT is also stated in the Minister of Education and Culture regulation Number 65/2013 of the Republic of Indonesia on the Standard Process of Primary and Secondary education in which it mentions that ICT is aimed at improving learning efficiency effectiveness (Nuh, 2013).

To meet the goals of this new curriculum, the government has tried hard to equip ICT facilities in schools. Many schools currently have enough supporting facilities and infrastructure to make use of ICT in learning activities, such as the provision of computer laboratories for students, computers for teachers, projectors, etc. Some schools have also provided Local Area Network that is connected wirelessly. This network has served all school residents to make use of such learning resources and media. However, previous studies show that the use of ICT by the teachers is still at low level (Hassan & Sajid, 2013; Wiranto, 2014). Many teachers use computers and internet only to prepare their lesson plans. In fact, Hassan & Sajid (2013) also reveal that many teachers are lack of confidence in ICT use despite having adequate knowledge. This can be implied that the teachers' experience and motivation to use ICT in class is still below expectation.

Teachers' perceptions and motivation in ICT use are two of the main determinants of successful ICT integration in learning activities (Al-Awidi & Aldhafeeri, 2016; Qasem & Viswanathappa, 2016). These two factors allow teachers to use ICT not only to prepare and assist their classroom teaching, but also to encourage students to learn autonomously outside the classroom. Motivation to use ICT in learning activities means encouragement to use ICT to achieve learning goals. Miarso & Hadi (2007) say that the utilization of ICT in the learning process is one of the factors that support the realization of a good quality learning process to achieve educational goals. Therefore, teachers need to have technical and pedagogical knowledge to integrate ICT into their classroom.

Even though there are growing numbers of studies investigating ICT use in Indonesian's Education, most of them focus only on urban areas (e.g.: Al-Munawwarah, 2014; Kristianto, 2017; Pramana, 2018). In fact, only half of the population in Indonesia live in urban areas (Statistics Indonesia-BPS, 2014). This statistics illustrates a gap in studies which highlight ICT use in village or sub-district schools. To fill this gap, a study which focuses on villages is needed. This is not only because the villages are different from big cities economically, but also because they are different geographically. For example, sub-district areas in Indonesia become the hardest hit areas in terms of flood every year which makes the computer facilities at schools easily broken or soaked. Besides, the internet connection is somewhat unstable. Therefore, this study focuses on teachers in rural districts in Indonesia to answer the following research questions:

(1) What are teacher perceptions toward the use of ICT in learning activities?

(2) What factors motivate teachers to use ICT in learning activities?

(3) What is the teachers' intensity of the use of ICT?

(4) What are the obstacles faced by teachers to use ICT in learning activities?

(5) Are there relationships between ICT training and their perceptions and motivations towards the use of ICT in learning activities?

In view of the research questions mentioned, the hypotheses are formulated as follows:

H1: Teachers have good perception towards the use of ICT in learning activities.

H2: Teachers' motivation to use ICT in learning activities is influenced by teachers' self-efficacy, ICT educational values, ICT impacts on teaching, and training attended.

H3: Teachers rarely use ICT in learning activities.

H4: Teachers' obstacles in ICT use in learning activities are caused by limited facilities.

H5 (a): There is a significant relationship between ICT training and teachers' perceptions towards the use of ICT in learning activities.

H5 (b): There is a significant relationship between ICT training and teachers' motivations towards the use of ICT in learning activities.

REVIEW OF RELATED LITERATURE

ICT IN LEARNING ACTIVITIES

Budiman (2012) views that the use of ICT in learning is closely associated with the use of computers and the internet. That is why computers and internet become important parts in the development of the use of ICT. Computers are not only electronic devices that help teachers to prepare teaching materials using Microsoft Office (Word, Excel and PowerPoint), but also as a means of communication

that can be done through e-mail facilities, video conferences, live streaming and etc. In short, ICT has become one of the learning media that is widely used in order to improve the effectiveness and efficiency in the learning process (Rahim, 2011).

According to Faridi (2009) the use of computers and the internet as learning media provides a lot of advantages, among others: (1) The internet provides a very wide connection; (2) Information access to the internet can be done at any time; (3) Information access via the internet is much faster compared to finding information on pages of books in the library; (4) The internet provides interactive learning activities; (5) Users can discuss with peers various things if they enter the mailing lists or chats; (6) Compared to buying original books or magazines, searching information through the internet is much cheaper.

Using computers and the internet in learning activities is expected to stimulate students to learn more independently and sustainably with the skills and natural potentials they have. The development of creativity and independency of students is also very widely open by making the internet a new learning system. The use of the internet as a learning system is relatively useful to reduce the distance between teachers and students. By using e-mail, for example, teachers can deliver messages to students without being limited by time and place. Students can also consult the teachers at any time and from anywhere. Through website utilization students can also play a role not only as connoisseurs of information but also as researchers and analysts by analyzing various data and information that have been obtained. In short, the use of e-mail, websites or blogs in learning activities is expected to remove space and time restrictions.

In learning activities, ICT can have two main functions: (1) as a tool for users (teachers or students) to assist learning and (2) as science. In this case, in addition to technology as part of the discipline that must be mastered by students, for example, in learning in schools according to the *2004 Curriculum* and *2006 Curriculum,* there are ICT subjects as a science that all competencies must be mastered by students. According to Kuskaya & Yasemin (2013) the integration of ICT in the teaching and learning process can be defined in five levels:

(1) Beginning of ICT integration: At this level, the teacher organizes activities aimed at developing students' basic ICT skills, preparing lesson plans, including utilizing available ICT applications.
(2) First Level of ICT integration: At this level, the teacher gives students homework and analyzes it using ICT to support their learning process.
(3) Second Level of ICT integration: At this level, the goal of using ICT by teachers is to develop high-level thinking skills of students. The teacher organizes activities to develop problem-solving and critical thinking skills.
(4) Third Level of ICT integration: At this level, teachers and students communicate with experts or students from other schools through networks outside the classroom.
(5) Fourth Level of ICT integration: At this level, students use ICT and its applications to provide solutions to real-world problems related to content.

In order to be able to implement the integration of ICT in the teaching process as mentioned, the teacher must have certain competencies. According to Inggit (2011) the minimum standard competencies that must be possessed by teachers includes: (1) operating computers; (2) assembling, installing, setting-up, maintaining, and solving problems of personal computers; (3) computer programming; (4) word processing; (5) spreadsheet; (6) managing databases and (7) creating interactive presentations that meet the rules of visual and interpersonal communication. Therefore, the teacher who masters ICT is the teacher who optimally uses computers in carrying out his duties, ranging from teaching preparation activities, implementing his teaching process, assessing and analyzing students' learning outcomes, as well as conducting remedial or enrichment activities. In short, it is im-

portant for teachers to integrate ICT, both in learning activities and in carrying out administrative tasks.

Although many studies have proven the advantages of using ICT to improve the quality of learning, in fact, not all teachers apply this technology in their teaching. Many studies suggest that the ICT integration in education has faced many obstacles. According to Mirzajani, Mahmud, Ayub, & Luan (2015), teachers are unable to utilize ICT in their classroom due to insufficient training, knowledge, skills, facilities, time and self-efficacy related to the use of ICT. This finding is supported by Hadriana (2017) who reveals that many factors may influence the teachers' use of ICT such as limited skills and limited knowledge of ICT, the availability of ICT equipment in schools, and teaching overloads. Another study also highlights that the challenges of ICT integration are due to lack of ICT-related competency and support for capacity building (Amuko, Miheso, & Ndeuthi, 2015). However, the factors affecting the success of ICT use in education are not isolated from each other. Their presence is equally important for enabling teachers to integrate ICT in their teaching. A study conducted by Ojo & Adu (2018) reveal that teachers did not utilize ICT in their teaching despite the adequate facilities due to limited knowledge and skill. Likewise, teachers with positive attitude towards ICT use and good skills could not use the ICT due to limited facilities (Hong, 2016). Therefore, both facilities and teachers' competency are keys to the successful ICT integration.

In developing countries, limited facilities are found to be the major constraint in integrating ICT in learning activities (Karunaratne, Peiris, & Hansson, 2018). However, Lim & Pannen (2012) also reveal other factors which also hamper Indonesian teachers from using ICT in their teaching, such as the lack of institutional and financial support and technical skills. Besides, it is also revealed that even though teachers seems to have adequate skill in using ICT, they did not integrate it into their teaching because they are either lack of methodological skills or supporting facilities (Muslem, Yusuf, & Juliana, 2018; Prasojo et al., 2018). This highlights the importance of the institutional support for teachers to build their capacity in using ICT for teaching (Copriady, 2014; Mwawasi, 2014), such as by giving training related to technical skill of using ICT (Amuko, Miheso, & Ndeuthi, 2015; Michael, Maithya, & Cheloti, 2016; Ojo & Adu, 2018) and training related to methodological knowledge of integrating ICT into teaching (Hlasna, Klimova, & Poulova, 2017; Prasojo et al., 2018).

Another potential factor, yet somewhat underexplored, is the teachers' intensity of ICT use. In fact, this is one of important factors in ICT integration (Papanastasiou & Angeli, 2008). A study conducted by Mwila (2018) and Tezci (2009) show that there is a positive correlation between the frequency of ICT use and teachers' attitude towards ICT integration. Besides, another study reveals that there is positive correlation between the frequency of ICT use and teachers' computer literacy (Azmi, 2017). Despite the limited findings, understanding the relationship between the frequency or intensity of ICT use and teachers' perceptions might help in more effective decision-making in terms of ICT integration in education (Papanastasiou & Angeli, 2008).

Perceptions and ICT Integration

There are several definitions of perception put forward by the researchers, one of which is offered by McShane & Glinow (2008). According to him, perception is the process of receiving information and making sense of the world around us. It entails deciding which information to notice, how to categorize this information, and how to interpret it within the framework of our existing knowledge. In other words, perception is the process of receiving information and stimuli from the surrounding environment, then interpreting the information and categorizing it in the framework of knowledge appropriately. Thoha (2010) argues that perception is more complex and broad compared to the sensing process because perception includes difficult interactions from selection, compilation and interpretation activities. But perception also depends on sensing which then occurs as a cognitive process of filtering, simplifying, and changing or perfecting the information received.

To be able to perceive a thing, the requirements that must be fulfilled are the perceived object, sensory device or receptor, and attention. Therefore to be able to provide a perception about the use of ICT in learning, a teacher must fulfill these requirements. According to Mwendwa (2017), there are several factors that influence the application of computer used by teachers: (1) pedagogical issues; (2) familiarity with computers; (3) teachers' training; (4) availability of time, and (5) availability of hardware and software. However, Technology Acceptance Model (TAM) developed by Davis in 1989 believes in two factors affecting someone receiving technology; namely, perceived usefulness and perceived ease of use. Perceived usefulness means the degree to which a person believes that using a technology will enhance his or her job performance, and perceived ease of use means the degree to which a person believes that the use of a technology will be free of effort (Davis, Bagozzi, & Warshaw, 1989). Although this theory had been revised several times, these two factors are still valid in understanding the use of technology. So, the definitions of teachers' perception in using ICT used in this research is the teachers' acceptability of using ICT in their teaching, compile the knowledge about ICT, interpret it and then implement the use of ICT in their language teaching. The indicators used are *perceived usefulness* and *ease of use*.

Many studies have echoed similar findings related to teachers' perception towards ICT integration. Despite the variation regarding the relationship between perceptions and teachers' demographic profile such as age, gender, teaching experience and ICT training, studies reveal that teachers have relatively positive perceptions toward the use of ICT in learning activities (Gebremedhin & Fenta, 2015; Qasem & Viswanathappa, 2016; Rosa, 2016; Silviyanti & Yusuf, 2015). There are many factors affecting teachers' perception towards the use of ICT in teaching and learning process, such as professional competency, perceived benefit, and cooperation among teachers (Li, Yamaguchi, & Takada, 2018).

Motivation and ICT Integration

The word motivation comes from the word 'motive', which can be interpreted as a driving force that influences the readiness to start doing a series of activities. Motivation is also related to the level of effort made by someone to achieve a goal. One definition of motivation is offered by Kreitner & Kinicki (2007). They say that motivation is a psychological process that enhances and directs behavior to achieve goals. Motivation can also be defined as internal factors and external factors that influence and encourage someone to increase success, achieve performance or change behavior and attitudes. According to Cheng & Dörnyei (2007), motivation is the main factor in determining success. Therefore, aspects of motivation must be seen as one of the important elements that must be considered. Being motivated means being moved to do something (Ryan & Deci, 2000). Therefore, the concept of motivation refers to why people think and behave as they do.

Catarina (2012) argues that the success of implementing ICT in education is determined by interrelated and complex factors. The results of the study broadly classify factors that facilitate the use of ICT in schools are: beliefs, values, and perceived attitudes of the teachers. Therefore social psychology theory from Bandura (1997) is considered very relevant. One theory is the theory of self-efficacy and the other is the theory of behavior (Glasman & Albarracín, 2006). According to Bandura (1997), people express their behaviors based on a belief system, specifically the belief in the ability to carry out certain behaviors successfully. This self-efficacy theory has been widely used in research related to individual intentions to use ICT. Research has proven that a strong sense of computer self-efficacy among teachers influences how often and how ICTs are used in their daily teaching and learning practices (Chang & Tung, 2008; Papastergiou, 2010).

The next factors that make teachers accept and use ICT in the classroom is their experience of using ICT (Badri, Al-Rashedi, & Mohaidat, 2013), experience on how to use this technology in the classroom environment (Keramati, Afshari-Mofrad, & Kamrani, 2011), and experience of using types of applications based on ICT age, and self-confidence (Molnár & Benedek, 2013). Further Keramati, Afshari-Mofrad, and Kamrani (2011) say that teachers' motivation and the trainings that they have got play an important role in the application of ICT in education, while Sang, Valcke, Van Braak,

Tondeur, & Zhu (2011) emphasize a strong relationship between attitudes toward something related to ICT in education. A positive attitude of the teacher can facilitate more diverse uses of ICT so that learning activities become more interesting and enjoyable. Conversely, teachers who have a negative attitude will not integrate ICT in their learning activities.

From the explanation, it can be inferred that teachers' motivation to use ICT comes from their readiness to use ICT in their teaching being caused by internal factors and external factors that influence and encourage them to get success in using ICT in their language teaching. In this research the indicators used are: self-efficacy, educational values, impacts on teaching and the training that the teachers have ever gotten.

METHODOLOGY

RESEARCH DESIGN

This study was a descriptive-quantitative research which aimed to investigate teachers' perceptions and motivations to ICT use in learning activities. To collect the data, a set of questionnaire which was adapted from Silviyanti & Yusuf (2015) and Teo (2008) was used as research instrument. The questionnaire developed by Silviyanti & Yusuf (2015) comprises of 16 items which are divided into two categories, namely Perceived usefulness (8 items) and Ease of Use (8 items). On the other hand, Computer Attitude Scale which was developed by Teo (2008) comprises of 21 items. The items are divided into four groups namely Affective (6 items), Perceived Usefulness (5 items), Perceived Control Components (6 Items) and Behavioral Intention (4 items). For the purpose of this study, the questionnaires were adapted and modified into 40 items which then were grouped into six categories namely Perceived Usefulness (11 items), Perceived Ease of Use (9 items), Self-Efficacy (5 items), Educational Benefit (6 items), Impact on Teaching (6 items), and Training Attended (3 items). This questionnaire was translated into Indonesian language for collecting data and re-translated into English for analysis.

The instrument (see Appendix) consisted of four parts: Part A was intended to obtain teachers' demographic data and data about the intensity of using ICT by the teachers. The demographic data was used only as supporting data. Part B was intended to obtain the data about the teachers' perceptions towards the use of ICT in learning activities. Part C was intended to determine the factors that motivated the teachers in using ICT. Part D consisted of two questions intended to obtain the data related to the obstacles being encountered by the teachers in using ICT. The items in Part B and C used 4-point Likert scale (Strongly disagree, Disagree, Agree, Strongly Agree). Before the questionnaire was distributed to the sample teachers, a try out was carried out on 30 non-sampled teachers to check the reliability. The Cronbach's Alpha was used to measure internal consistency of the instrument. The reliability obtained for the perception questionnaire was 0.836 and from motivation questionnaire was 0.762. As both scores were higher than 0.700, the questionnaire were used for research instrument (Muijs, 2011).

The data collected in this study were used for descriptive and inferential analysis. The process of data analysis was done with the help of SPSS. In terms of descriptive analysis, percentage was mainly used to represent the frequency of the data. For the inferential analysis, Mann- Whitney U-test was used to find out the significance from comparison of the means between teachers' demographic characteristics and their perceptions and motivation towards ICT use in learning activities. This test type was chosen because the data of teachers' perceptions and motivations were not normally distributed.

PARTICIPANTS

The population for this study was all public high school teachers who teach in rural districts in Indonesia. Based on government's database, total number of senior high school teachers in Indonesia was approximately 238,223 people (Statistics Indonesia-BPS, 2017). With the assumption that 40 percent

of these teachers teach in rural districts, the size of the target population was predicted to be about 100,000. With 5 percent margin of error, the sample size for this study should be at least 384 (Denscombe, 2010).Therefore, the sample size in this study (616) satisfied the minimum requirement for valid statistical analysis. The sample was chosen using stratified random sampling technique (Arikunto, 2010) involving all state senior high schools (SMANs) from four sub-districts in Indonesia (Kuantan Singingi, Indragiri Hilir, Rokan Hilir, and Kampar). 633 teachers from the four sub-districts were selected based on their certification status. All of the selected teachers had taken certification (in-service teacher training) program, so pedagogical knowledge would be deemed homogenous for the purpose of this study. As most of the targeted schools did not have internet facilities, the questionnaire was printed out and distributed directly by visiting the schools. This process took approximately one month (August 2018) as some schools had limited access from city center.

After giving out the questionnaire to teachers, it had 98.3% (622) of return rate. However, 6 responses were invalid because some questions were blank. Other 11 questionnaires were not sent back to the researchers within the timeframe (the time was limited due to the access to the targeted locations). Therefore, this study only analyzed the 616 valid responses.

Even though there have been many studies investigating teacher readiness toward ICT integration in Indonesian's education, very little has focused on teachers in rural areas. In fact, similar curriculum might work differently in some areas due to their infrastructure development, facilities, or geographic location. For example, the sample districts for this study had had limited facilities related to ICT in their schools. Even if the government had provided some schools with computers facilities, they could not last long due to flood or other natural disasters. Therefore, this is essential to look at the perception and motivation of teachers in those areas, and to investigate the challenges they faced when using ICT in their classrooms.

FINDINGS AND DISCUSSION

FINDINGS

Based on the data, it was found that 438 teachers (71.1%) were civil servants. The teachers' teaching experience also varied, and as many as 237 teachers (38.5%) had been teaching between 11-15 years. The teachers covered various subjects such as English, History, Mathematics, Physics, Cultural Arts, Indonesian Language, Geography, Sports and Physical Education, Civic Education, Biology, Sociology, Chemistry, Economics, and Islamic Education. The following are the results of a questionnaire distributed to 616 teachers covering the data on teachers' perception, teachers' motivation and intensity of ICT use.

Teachers' perceptions

To answer the first research question: "What are teacher perceptions toward the use of ICT in learning activities?" a questionnaire consisting of 20 statements was distributed. As mentioned previously, the perception of teachers towards the use of ICT in learning activities can be seen from the *perceived usefulness* and *ease of use*. The perceptions of teachers towards the use of ICT in learning activities in terms of the *Perceived Usefulness* are shown in Table 1.

Table 1 shows that in terms of the perceived usefulness, the perceptions of teachers on the use of ICT in learning activities is very good. Teachers agree that the use of ICT can make learning process more effective, increase students' motivation, foster positive attitudes of students towards learning, and can make learning activities more interesting and enjoyable. One very interesting thing is that all teachers agree that the use of ICT can make the students have a better understanding of how technology affects their lives. Regarding the benefits, the teachers agree that the use of ICT can improve teaching performance and can help them learn new skills.

Table 1: Perceptions of Teachers Based on the Perceived Usefulness

No.	Statements	Responses (%)			
		Strongly Disagree	Disagree	Agree	Strongly Agree
1	The use of ICT can make learning process more effective.	0.0	4.8	61.3	33.9
2	The use of ICT can increase students' motivation.	0.0	1.6	64.5	33.9
3	The use of ICT can foster positive attitudes of students towards learning.	0.0	1.6	71.0	27.4
4	The use of ICT can make learning activities more interesting and enjoyable.	0.0	3.2	64.5	32.3
5	The use of ICT will enable students to become active students.	0.0	6.5	72.6	21.0
6	The use of ICT can create various learning activities.	0.0	6.5	64.5	29.0
7	The use of ICT can make the students have a better understanding of how technology affects their lives.	0.0	0.0	67.7	32.3
8	I do not feel that the use of ICT has given benefits to me as a teacher.	1.6	51.6	37.1	9.7
9	The use of ICT is as important as the use of textbooks for students.	1.6	11.3	66.1	21.0
10	The use of ICT can improve my teaching performance.	0.0	1.6	80.6	17.7
11	I do not feel that the use of ICT can help me learn new skills.	1.6	37.1	53.2	8.1

The perceptions of teachers towards the use of ICT in learning activities in terms of *Ease of Use* are shown in Table 2.

Table 2: Perceptions of Teachers Based on Ease of Use

No.	Statements	Responses (%)			
		Strongly Disagree	Disagree	Agree	Strongly Agree
12	The use of ICT in learning activities is quite easy and is not troublesome.	0.0	21.0	58.1	21.0
13	The use of ICT provides convenience in meeting the needs of learning resources.	0.0	6.5	71.0	22.6
14	The use of ICT makes it easy for teachers to explain the concept of the lesson.	0.0	6.5	72.6	21.0
15	The use of ICT provides convenience in monitoring students' learning progress.	0.0	1.6	79.0	19.4
16	The use of ICT provides convenience in controlling students' activities	0.0	6.5	80.6	12.9
17	The use of ICT provides convenience in assessing the students' progress	0.0	4.8	75.8	19.4

No.	Statements	Responses (%)			
		Strongly Disagree	Disagree	Agree	Strongly Agree
18	The use of ICTs provides convenience in storing teachers' and students' documents.	0.0	4.8	58.1	37.1
19	The use of ICT has caused a lot of technical problems.	0.0	46.8	27.4	25.8
20	The use of ICT provides convenience in communication.	0.0	11.3	51.6	35.5

Based on Table 2, it is noticeable that when viewed from the ease of use, the perception of teachers on the use of ICT in learning activities is very good. The teachers agree that the use of ICT in learning activities is quite easy. The use of ICT also provides convenience in meeting the needs of learning resources; it also gives an ease to explain the concept of the lesson, an ease to monitor students' learning progress and an ease to control students' activities. Although the use of ICT has caused a lot of technical problems, the teachers agree that the use of ICT provides convenience in assessing the students' progress and storing teachers' and students' documents. Moreover, the use of ICT also provides convenience in communication.

Factors that cause teachers' motivation

To answer the second research questions, "What factors motivate teachers to use ICT in learning activities?" it was found that there are four factors that can influence the teachers' motivation to use ICT in learning activities, namely: self-efficacy, educational values, impacts on teaching, and trainings that have been attended.

Self-efficacy. The first factor that motivates the teachers to use ICT in the learning activities is self-efficacy.

Table 3 shows that many teachers believe in their ability and knowledge to use ICT in learning activities. Surprisingly, all teachers agree that they are motivated to use ICT in learning activities because they are sure they can get good results and benefits. In addition, the teachers claim that they are able to search, evaluate and choose ICT devices that are appropriate to support their learning activities. Almost all teachers say that they have certain strategies to solve obstacles in the use of ICT and they will continue to integrate ICT in their future learning.

Table 3: Teachers' Self-efficacy

No.	Statements	Responses (%)			
		Strongly Disagree	Disagree	Agree	Strongly Agree
1	I believe in my ability and knowledge to use ICT in learning activities.	0.0	9.7	64.5	25.8
2	I like to use ICT in my learning activities because I am certain that I can get good results and benefits.	0.0	0.0	79.0	21.0
3	I am able to search, evaluate and choose ICT devices that are appropriate to support my learning activities.	0.0	25.8	54.8	19.4
4	I have certain strategies to solve problems and obstacles with the use of ICT.	0.0	3.2	75.8	21.0

No.	Statements	Responses (%)			
		Strongly Disagree	Disagree	Agree	Strongly Agree
5	I am sure that I can continue to integrate ICT in my learning activities in the future.	0.0	4.8	71.0	24.2

Educational Values. The next factor that motivates teachers to use ICT in learning activities is the values of using ICT in education.

Table 4 shows that almost all of the teachers agree that the use of ICT can facilitate student-centered learning. Another point is that all teachers agree that the use of ICT can prepare students for their future careers as well as improve their understanding. Furthermore, the teachers agree that the use of ICT can provide them with opportunities to improve their teaching quality, follow the latest information and learn new things.

Table 4: Educational Value

No.	Statements	Responses (%)			
		Strongly Disagree	Disagree	Agree	Strongly Agree
6	The use of ICT can facilitate student-centered learning.	0.0	3.2	69.4	27.4
7	The use of ICT can prepare students for their future careers.	0.0	0.0	69.4	30.6
8	The use of ICT provides an opportunity to improve the quality of my teaching.	0.0	3.2	62.9	33.9
9	The use of ICT can improve students' understanding.	0.0	4.8	71.0	24.2
10	The use of ICT provides an opportunity to follow the latest information.	0.0	3.2	64.5	32.3
11	The use of ICTs can provide opportunities to study new things.	0.0	1.6	64.5	33.9

Impacts on teaching. The third factor that motivates teachers to use ICT in learning activities is the impacts of using the ICT on teaching. The results of the questionnaire analysis are presented in Table 5.

Table 5 displays that teachers agree that the use of ICTs can contribute to making students work more actively and problem-based learning. Using ICT can also inspire and make students able to express themselves and improve the quality of their learning. Furthermore, teachers agree that the use of ICT can make learning more meaningful. For the teachers, using ICT can develop their pedagogical abilities and increase their self-confidence as well.

Table 5: Impacts on teaching

No.	Statements	Responses (%)			
		Strongly Disagree	Disagree	Agree	Strongly Agree
12	The use of ICT can contribute to making students work more actively and problem-based.	0.0	1.6	75.8	22.6
13	The use of ICT can inspire and make students able to express themselves.	0.0	3.2	74.2	22.6
14	The use of ICT can improve the quality of student learning.	0.0	1.6	75.8	22.6
15	The use of ICT can make learning more meaningful.	0.0	1.6	69.4	29.0
16	The use of ICT can develop teacher's pedagogical abilities.	0.0	1.6	75.8	22.6
17	The use of ICT can increase self-confidence	0.0	4.8	66.1	29.0

Trainings that have been attended. The next factor that motivates teachers to use ICT in learning activities is the training that has been attended. The results of the questionnaire analysis can be seen in Table 6.

Table 6: Trainings that have been attended

No.	Statements	Response (%)			
		Strongly Disagree	Disagree	Agree	Strongly Agree
18	The training held by the school made me motivated to use ICT in learning activities	0.0	9.7	64.5	25.8
19	I need more trainings on how to use ICT in learning activities	0.0	8.1	38.7	53.2
20	All teachers and prospective teachers must attend trainings on the use of ICT.	0.0	4.8	48.4	46.8

From Table 6, it is clear that the training on using ICT held by the school made the teachers motivated to use ICT in learning activities. Furthermore, the teachers say that they need to attend more trainings on how to use ICT in learning activities. The teachers also agree that all teachers and prospective teachers must attend trainings on the use of ICT.

Intensity of ICT use by teachers

To answer the third research question, "What is the teachers' intensity of the use of ICT?", the teachers were given a statement that could be answered through five alternatives. Two answer choices have a negative connotation; namely, Never and Rarely. While the three other answer choices have a positive connotation, namely; Sometimes, Often and Very Often. The results of the data analysis are shown in Table 7.

Table 7: Intensity of ICT use by teachers

No.	Type of ICT	Intensity				
		Never	Rarely	Sometimes	Often	Very often
1	Computer and the Internet	4.8	14.5	22.7	43.5	14.5
2	Slides/ PowerPoint	3.2	14.5	32.3	33.9	16.1
3	E-mail	25.8	9.7	21	43.5	0
4	CD / VCD	24.2	25.8	29.1	16.1	4.8
5	Film	37.2	17.7	27.4	17.7	0
6	Computer Laboratory	56.5	27.4	11.3	3.2	1.6
7	Language Laboratory	58	27.4	6.5	8.1	0
8	Quiz/ Task/ Online Games	67.7	12.9	9.7	9.7	0
9	Smartphone	17.7	16.1	37.2	29	0
10	Web / blog	67.7	12.9	12.9	6.5	0
Mean		36.28	17.89	21.01	21.12	3.7

Table 7 demonstrates that more than half (54.17%) of the teachers never or rarely use ICT in learning activities. However, it also depicts that vast majority of teachers use several types of ICT very frequently. For example, the greatest intensity of ICT use by teachers is the use of slides/PowerPoint presentations (82.3%) and the use of computers and the internet (80.7%). Slides/PowerPoint presentations along with the use of computers are widely used by teachers as learning media when explaining a subject matter. The use of computers and the internet is widely used by teachers to find information and to respond to the e-mail sent by the students. The lower intensity of ICT use by the teachers is the use of language laboratory (85.4%) and computer laboratory (83.9%). This is caused by the fact that these laboratories are only used by teachers who teach English and Indonesian subjects, and only a few of them participated in this study. In addition, it was found that not all schools have language and computer laboratories.

Obstacles faced by the teachers

To answer the fourth research question, "What are the obstacles faced by high school teachers to use ICT in learning activities?", it was found that the obstacles faced by high school teachers in four rural districts to use ICT in learning activities are as follows:

(1) Internet connection is often unstable.
(2) Electricity often goes out.
(3) Limitations of ability and knowledge to design ICT-based learning activities due to lack of ICT-related training.
(4) Less able to follow the rapid development of technological advances
(5) Inadequate number of laptops and projectors in schools.
(6) The schools do not have a computer and/or a language laboratory.
(7) Limited time for teachers to find information or to design their own learning media.

Teachers' demographic characteristics and their perception towards ICT use

To answer the fifth research question, "What are the relationship between ICT training and teacher perceptions and motivations towards the use of ICT in learning activities?", the Mann-Whitney U test was performed. The results of the data analysis are shown in Table 8, Table 9, and Table 10.

Table 8: Descriptive Statistics table for Perceptions and Motivations

	N	Mean	Std. Deviation	Minimum	Maximum
Perceptions	616	3.1109	.38494	2.25	3.95
Motivations	616	3.2355	.34546	2.25	4.00
Training	616	1.27	.446	1	2

Table 9: Mann-Whitney Tests based on ICT Training

	Training	N	Mean Rank	Sum of Ranks
Perceptions	No	448	308.37	138149.00
	Yes	168	308.85	51887.00
	Total	616		
Motivations	No	448	308.09	138024.00
	Yes	168	309.60	52012.00
	Total	616		

Table 10: Test Statistics for Perceptions and Motivation

	Perception	Motivation
Mann-Whitney U	37573.000	3.745E4
Wilcoxon W	1.381E5	1.380E5
Z	-.030	-.094
Asymp. Sig. (2-tailed)	.976	.925

a. Grouping Variable: Training

Table 8, 9, and 10 illustrate the results from Mann-Whitney U-Test where mean rank of perceptions and motivations of teachers who have joined ICT training were slightly higher than those who have not joined any ICT training (Perception=308.85; Motivation=309.60). However, the statistics test (Table 10) shows that statistical significance of both perceptions and motivation between teachers who have and have never joined training was higher than 0.05 (p=0.925). This implies that no statistically significant relationship was found between ICT training and teacher perceptions and motivations.

Discussion

The importance of using ICT in learning activities cannot be ignored. That is why the government has implemented the *2013 curriculum* which is a technology-based curriculum. This government policy must be supported by all parties, especially teachers as the important persons who implement teaching and learning activities in the classroom. Teo (2008) argues that if a school wants to be a superior school, it is important to ensure that its teachers are able to integrate technology into the curriculum. Professional teachers are teachers who continue to make changes and face the development of new technologies in their lives. As professional workers, teachers must understand their roles and functions as resources and catalysts for learning activities (Copriady, 2014). Of course, this is not an easy way. Many factors influence the success of teachers in using ICT in their teaching activities, including the perception and motivation of teachers to use ICT in their teaching activities.

The results of data analysis in Table 1 and Table 2 show that more than 60% teachers agree and strongly agree to each of the statements given in the questionnaire. This indicates that the teachers have a positive perception of on the use of ICT in learning activities. This positive perception arises because the teachers have seen and felt lots of values of using ICT in learning activities. Moreover, the teachers have also felt convenient when using ICT in learning activities. In terms of usefulness, more than 90% of teachers agree that the use of ICT can make learning activities more effective, increase students' motivation, foster positive attitudes of students towards learning, make learning activities more interesting and enjoyable, and create more various learning activities and other things. Whereas in terms of ease of use, more than 90% of teachers agree that the use of ICTs provides convenience in meeting the needs of learning resources, explaining the concept of the lesson, monitoring students' learning progress, communication, as well as provides convenience storing teachers' and students' documents. Based on this finding, therefore, it shows that the hypothesis H1 is supported and it can be concluded that the teachers have a positive perception towards ICT integration in their classroom.

Regarding teachers' motivation, there are several factors that cause motivation towards ICT use to arise: self-efficacy, educational value, impact of using ICT on teaching activities, and trainings that have been attended (Bandura, 1997; Catarina, 2012; Glasman & Albarracin, 2006). Based on Table 3, Table 4, Table 5, and Table 6, majority of teachers have responded positively on each statement given. In terms of self-efficacy, the teachers believe in their ability and knowledge to use ICT in learning activities. The teachers like to use ICT in their classroom because they can see good results and benefits. Further by using ICT, the teachers say that they are able to search, evaluate and choose ICT devices that are appropriate to support their teaching. Although there are some obstacles faced by teachers in using ICT, they have certain strategies to solve them and they are sure that they can continue to integrate ICT in their classroom. According to Catarina (2012), self-efficacy of using ICT in education will have a direct effect on the use of ICT by teachers. These positive responses might imply that teachers have good motivation in using ICT in their classrooms.

Another factor that raises the motivation of teachers in using ICT is educational values. As shown in Table 4, the teachers agree that the use of ICT can facilitate student-centered learning, prepare students for their future careers, and improve students' understanding. Furthermore, the use of ICT by the teachers also provides an opportunity to improve the quality of their teaching as well as provide opportunities for teachers to follow the latest information and to study new things. The teachers also agree that using ICT gives positive impact on teaching. The use of ICT can contribute to making students work more actively and problem-based, make learning activities more meaningful. Teachers are also motivated because the use of ICT can develop the pedagogical ability of teachers to increase self-confidence. In view of these findings, therefore, the hypothesis H2 is supported and it can be concluded that teachers' motivation in using ICT in learning activities is influenced by their self-efficacy, ICT educational values, ICT impact on teaching, and trainings which they have attended.

Even though the findings of this study show that teachers have positive perception and motivation towards ICT integration in their classrooms, the data reveal that majority of the teachers never or rarely use some types of ICT in learning activities. For example, more than half of the teachers never or rarely use computer/language laboratory and quiz/task/online games. This finding supports the hypothesis H3 as the mean score indicates that 54.17% of the teachers never or rarely use ICT in their classrooms. However, the data also show that they frequently used computer and the internet (80.7%), slides/PowerPoint (82.3%), e-mail (64.5%), and smartphone (66.2%). This echoes the findings of previous studies which reveal that teachers very often use word processing software and the internet to assist their teaching (Lau & Sim, 2008; Mwila, 2018). Furthermore, this finding also supports the findings of Yang and Tzuo (2011) who argue that teachers often use the internet to find information. Most teachers use computers and the internet to find information, examples, pictures, or to make presentations.

Good perception and motivation of the teachers towards the use of ICT need to be maintained, even increased. However, the reality shows that good perception and motivation are not yet able to guarantee that the integration of ICT use in the curriculum goes well. The teachers said that there were various obstacles they encountered to utilize ICT in learning activities. The problems they faced are related to limited time, lack of capacity and knowledge related to the use of ICT and the limited facilities and infrastructure. This finding partially supports the hypothesis H4 as it shows that limited facilities are not the only problems that the teachers face in integrating ICT into their teaching. What has happened is not surprising because these obstacles also occur in almost all parts of Indonesia and even in many other countries. A number of international studies have also shown that secondary school teachers lack competence in the use of ICT as a pedagogical tool in the teaching and learning process (Bingmlas, 2009; Nihuka & Voogt, 2011).

To improve the teachers' competencies, various efforts need to be done, one of which is by conducting adequate trainings on the use of ICT in learning activities. Gani, Siarap, and Mustafa (2006) mention there is a significant relationship between knowledge, skills and the use of ICT by the teachers. Lack of the right skills and knowledge will be a barrier for teachers to use ICT and it can cause teachers to become discouraged and have negative views on the use of ICT. Views will influence the attitudes of teachers towards the application of ICT (Albirini, 2006). Furthermore, the attitude of teachers will have a significant impact on their behaviors in responding to the use of ICTs (Badri, Al-Rashedi, & Mohaidat, 2013).

In the context of the current learning process, the use of ICT by teachers involves the use of hardware and software applications to solve problems and to arouse student learning spirit. Therefore, the ability of teachers to use ICT includes their ability to access information, create solutions, analyze and apply knowledge in the teaching and learning process. Based on the existing literature, many factors identified can influence the use of ICT by teachers, including lack of necessary equipment, time, administrative and technical support, inadequate technology training, and personal trust (Ertmer, 2005); however, among these factors, teachers still play an important role. Teachers must be able to overcome the problems they are facing. Regarding this matter, 96.8% of respondents of this research stated that they had certain strategies to solve problems they faced when using ICT.

However, it is found that there is no statistically significant relationship between ICT training and teacher perceptions and motivations towards ICT integration (Table 8, 9, and 10). This finding supports other previous studies which found that teachers' demographic characteristics such as age, gender, teaching experience, ICT training and experience do not have significant influence on teachers' perceptions and attitudes towards ICT integration (Padmavathi, 2013; Semerci & Aydin, 2018). Based on this finding, therefore, the hypotheses H5 (a) and (b) are not supported. However, despite this finding, ICT training related to methodological skill in integrating ICT into teaching is still needed by teachers in Indonesia in order to utilize ICT successfully in their teaching (Muslem, Yusuf, & Juliana, 2018).

CONCLUSIONS

The purposes of this research were to describe and analyze the perceptions and motivations of teachers towards the use of ICT in learning activities and the factors that motivated them to use ICT in learning activities. In addition, this study also discusses the intensity of the use of ICT by the teachers and the obstacles they faced. Based on data analysis, some conclusions can be drawn as in the following:

(1) The results of data analysis as shown in tables indicated that teachers have positive perceptions towards ICT use in learning activities. Although they faced several obstacles related to facilities and technical knowledge, the percentage of positive responses in terms of their perceptions regarding the Perceived Usefulness and Ease of Use were relatively high (more than 60% agree and strongly agree on the given statements).

(2) The factors that motivate the teachers to use ICT in learning activities are self-efficacy, the values of using ICT that they see and feel, the impacts of using ICT on teaching, and training experience. Of these four factors, the impacts that ICT has on teaching seems to be the most motivating factor for teachers to use ICT in their classroom, which was accounted for 97.6% of overall agree and strongly agree score. Although the importance of ICT related trainings scored the lowest of all factors, the response of 'strongly agree' in this category was accounted for the highest (41.9%). This might imply that teachers strongly agree that ICT related trainings were important motivator for ICT use in learning activities.
(3) Regarding the intensity of ICT use, the data shows that computer and the internet, e-mail, slide/PowerPoint presentation, and smartphones were the most frequently used by the teachers in learning activities. However, the data show that there were more than half (54.17%) teachers who rarely and even never used ICT at all in their classrooms.
(4) The issue of intensity of the ICT used might be due to the obstacles faced by the teachers such as lack of facilities, internet connection, limited time and lack of IT knowledge. However, 96.8% of teachers said that they had their own strategies or ways to solve these obstacles, and they believed that they could continue to integrate ICTs in future learning activities.
(5) The statistics test of the relationship between ICT training and teacher perceptions and motivation did not indicate statistically significant result. However, the obstacles and the intensity of ICT use that the teachers highlighted in the questionnaire indirectly speak to the importance of trainings which involve methodological and technical skills related to the ICT integration in learning activities.

SUGGESTIONS

Because of the great expectations of the government and the community for good quality education, consolidation and efforts from various parties are needed. Therefore, a number of suggestions are provided as in the following:

(1) To apply ICT-based curriculum as expected by the government, it is important for teachers to continue improving their ability and enriching their knowledge related to the use of ICT through training, both held by schools or other institutions so that teachers can vary their teaching methods or teaching strategies.
(2) The school principals together with related parties in the Education Office have to work together in designing IT training programs for teachers so that they have more knowledge and skills related to the use of ICT in teaching and learning activities and at the same time they can increase their confidence in using ICT.
(3) The government as a policy-maker should provide financial support for the schools to adequately provide ICT equipment needed in schools, as well as to prepare necessary facilities and infrastructure.

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APPENDIX

Part A: Demographic Information

1. Subject taught: _____

2. Teaching experience :
   a. Less than 5 years
   b. 5 – 10 years
   c. 11 – 15 years
   d. 16 – 20 years
   e. More than 20 years

3. Education background:
   a. Undergraduate degree
   b. Postgraduate

4. Certification status :
   a. Yes
   b. No

5. Employment status :
   a. Civil servant
   b. Non-civil servant

6. Do you have personal computer or laptop?
   a. yes
   b. no

7. Availability of computers and internet access at school:
   a. poor
   b. moderate
   b. good
   d. very good

8. Have you attended training related to ICT use?
   a. no
   b. yes, please specify: _____
   _____

9. Type of ICT used in teaching activities (circle any options which apply)
   a. Slides/ Powerpoint (including text, graph, image, audio, video, or animation)
   b. E-mail
   c. Educational CD / VCD
   d. Film
   e. Online quiz
   f. Game online
   g. Giving task/ discussing learning materials using *smart-phone* (social media like *WhatsApp, Facebook* and *twitter*)
   h. Blog
   i. Others , please specify: _____

Part B: The use of ICT in teaching and learning activities

Please tick (√) the extent to which you feel that best fits for the following statements.

SD = Strongly Disagree **A = Agree**

D = Disagree **SA = Strongly Agree**

No.	**Statement**	*Response*			
		SD	*D*	*A*	*SA*
PERCEPTION Perceive of Usefulness					
1	The use of ICT can make learning process more effective.				
2	The use of ICT can increase students' motivation.				
3	The use of ICT can foster positive attitudes of students towards learning.				
4	The use of ICT can make learning activities more interesting and enjoyable.				
5	The use of ICT will enable students to become active students.				
6	The use of ICT can create various learning activities.				
7	The use of ICT can make the students have a better understanding of how technology affects their lives.				
8	I do not feel that the use of ICT has given benefits to me as a teacher.				
9	The use of ICT is as important as the use of textbooks for students.				
10	The use of ICT can improve my teaching performance.				
11	I do not feel that the use of ICT can help me learn new skills.				
Perceived ease of use					
12	The use of ICT in learning activities is quite easy and is not troublesome.				
13	The use of ICT provides convenience in meeting the needs of learning resources.				
14	The use of ICT makes it easy for teachers to explain the concept of the lesson.				
15	The use of ICT provides convenience in monitoring students' learning progress.				
16	The use of ICT provides convenience in controlling students' activities				
17	The use of ICT provides convenience in assessing the students' progress				
18	The use of ICTs provides convenience in storing teachers' and students' documents.				
19	The use of ICT has caused a lot of technical problems.				
20	The use of ICT provides convenience in communication.				
MOTIVATION Self-efficacy					
1	I believe in my ability and knowledge to use ICT in learning activities.				
2	I like to use ICT in my learning activities because I am certain that I can get good results and benefits.				

No.	**Statement**	*Response*			
		SD	*D*	*A*	*SA*
3	I am able to search, evaluate and choose ICT devices that are appropriate to support my learning activities.				
4	I have certain strategies to solve problems and obstacles with the use of ICT.				
5	I am sure that I can continue to integrate ICT in my learning activities in the future.				
Educational Benefit					
6	The use of ICT can facilitate student-centered learning.				
7	The use of ICT can prepare students for their future careers.				
8	The use of ICT provides an opportunity to improve the quality of my teaching.				
9	The use of ICT can improve students' understanding.				
10	The use of ICT provides an opportunity to follow the latest information.				
11	The use of ICTs can provide opportunities to study new things.				
Impact on teaching					
12	The use of ICT can contribute to making students work more actively and problem-based.				
13	The use of ICT can inspire and make students able to express themselves.				
14	The use of ICT can improve the quality of student learning.				
15	The use of ICT can make learning more meaningful.				
16	The use of ICT can develop teacher's pedagogical abilities.				
17	The use of ICT can increase self-confidence				
Trainings which have been attended					
18	The training held by the school made me motivated to use ICT in learning activities				
19	I need more trainings on how to use ICT in learning activities				
20	All teachers and prospective teachers must attend trainings on the use of ICT.				

1. What obstacles do you face when using ICT in teaching and learning activities?
2. How do you cope with the obstacles when using ICT in teaching and learning activities?

Thank you for your participation.

BIOGRAPHIES

Mahdum holds a PhD in Resource and Information Technology from The National University of Malaysia. He is a lecturer in the Faculty of Teacher Training and Education, Riau University. His areas of research interest include the use of Information and Communication Technology (ICT) in education and Teaching English as a Foreign Language (TEFL). He has presented papers in national and international conferences on ICT in education.

Hadriana holds a PhD in Resource and Information Technology from The National University of Malaysia. She is a lecturer in the Faculty of Teacher Training and Education, Riau University. Her areas of research interest include educational technology in English language teaching and Teaching English as a Foreign Language (TEFL). She has presented papers in national and international conferences on ICT in education.

Maria Safriyanti holds a Master Degree in Teaching English as a Foreign Language (TEFL) from Padang State University. She is a lecturer in the Faculty of Teacher Training and Education, Riau University. Her areas of research interest include educational technology, Teaching English as a Foreign Language (TEFL), and English literature. She has presented papers in national and international conferences on ICT in education.