EFL Learners' Self-regulated Learning in a Technology-Mediated Language Learning Setting

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This study is aimed at investigating self-regulated learning when technology-mediated learning occurs in the EFL classroom. Online Likert-scale questions by Lai and Gu, (2011) and technology acceptance model by Fred Davis & Venkatesh (1996) were administered to 102 EFL learners of a higher education institution in Indonesia to acquire data of self-regulated learning and the participants' technology acceptance. Using correlation analysis, it is revealed that there is significant correlation between technology acceptance and self-regulated learning and there are variations of use of technology on the aspects of self-regulated learning in terms of goal commitment, metacognitive, affective, social, resource, and culture. This study is expected to contribute to the development of theories about integration of technology into language learning and self-regulatory skills in education field.

Key words: *EFL, technology acceptance, self-regulated learning, language learning.*

Introduction

The study of technology-mediated learning into language learning is interesting since many researchers and practitioners put their interest on technology utilisation in the area of educational development. Some research studies reveal that the use of technology in the classroom can be associated with learning outcomes (Hibbard and McDowell Lefaiver, 2012), collaboration and social feedback (Kitsantas and Dabbagh, 2011), learning approaches used by students (Jairam and Kiewra, 2010; Lee, Lim, & Grabowski, 2010), the opportunities for language learners to contact with native speaker and peer learners around

the world, and access to authentic material to facilitate their language learning exposure (Thorne, Black & Skyes, 2009; Zhao & Lai, 2007).

Technology provides venues which enable the language learners to use self-learning and regulate their learning efforts in order to achieve the learning goals. The recent studies reveal that learning technology provides paths and helps learners regulate their language learning (McLoughin & Lee, 2010; Dabbagh & Kitsantas, 2012) and technology-enhanced learning may facilitate academic performance and increase a positive attitude towards learning (Lopez-Morteo & Lopez, 2007; Chang,2007; Kramarski & Gutman, 2006). Specifically, self-regulated learning reflects the learners' efforts in terms of setting goals, utilising learning strategies to achieve those goals, having self-monitoring, and evaluation of their learning progress regularly. Technology can engage learners in self-regulated cycles of learning (Kitsantas & Dabbagh, 2010). Research conducted by Dabbagh & Kitsantas (2004) demonstrates that utilising technology in a higher education setting supports self-regulated learning which leads to learning improvement. For example, the use of blogs or journals, podcasts, virtual worlds, LMS tools or wikis may relate to self-monitoring, self-efficacy, task strategies, and self-evaluation (Kitsantas, 2013).

Developing self-regulated learning needs a process or phase which builds language learners' strategic planning, self-monitoring, and self-evaluation gradually in their learning process. Self-regulated learning is not spontaneously acquired, it may be shaped and developed through participation in an environment that provide learners with opportunities to be in control of their own learning (Zimmerman, 2000). Self-regulated learning can be developed through observation, emulation, self-control, and self-regulation (Zimmerman, 2002). Language learners observe processes demonstrated by models and then try to master it step by step. In the second step, emulation, language learners are encouraged to demonstrate the way to emulate the task exampled by the model confidently. In the third phase, self-control, language learners practice the skills and try to do them independently. In the last phase, self-regulation, language learners shift from setting process-oriented goals to more outcome-oriented goals. *YouTube*, for example, may allow language learners to watch the demonstration at their own pace (Kitsantas, 2013) or podcasts may enhance the acquisition of a second language by allowing them to use a variety of strategies while listening, or repeat phrases and vocabulary (Solomon & Schrum, 2007). In this respect, Zimmerman & Kitsantas (2007) argue that self-regulatory process and self-motivational beliefs interact in three cyclical phases, namely, forethought, performance, and self-reflection. On the forethought phase, setting specific process and goals and using strategic planning are important in accomplishing the outcome goals. During the performance phase, self-regulated learners use self-control strategies in which they use self-monitoring techniques which may include record keeping, diary entries, keeping a journal, using visual means like graphs to keep data (Kitsantas, 2013). In the last phase—self-reflection, self-regulated learners undertake self-

evaluation, comparing their own performances to a specific standard (Zimmerman, 2008) frequently and objectively using self-monitored data (Kitsantas, 2013).

In language learning experiences, in order to achieve the goals, self-regulated learners should have high motivation by setting or improving self-efficacy in their academic learning performance (Bandura, 1997; Zimmerman & Kitsantas, 2005). Besides, setting goals, using strategic planning in achieving the goals, becomes very crucial as the language learning process needs much commitment or mindful attendance of the language learners. In the action, they were asked to perform reflecting efforts of their learning strategies or techniques when following an instructional process. The last, self-regulated learners engage with self-reflection in which they evaluate their learning progress, is what makes failure or success in their learning experience.

Designing learning environment to facilitate the students' self-regulation is important in language learning. Schwienhorst (2002) suggests to use a virtual environment because it will encourage motivation and enhance self-regulatory process of second language learners. According to him, virtual environment is more likely to increase cognitive engagement levels than traditional face-to-face learning. Merchant (2010) claims that the virtual world encourages students to keep records of their work, reflect on their achievements, and get more learning materials or resources.

The current study is intended to survey self-regulated learning of pre-service teachers in one of the higher education in Indonesia when technology-mediated learning occurs in the language learning classrooms. This is different from previous studies in which using technology to regulate self-regulated learning in terms of willingness to communicate using blog (Alm, 2016) and motivating EFL learners through ICT (Diakou, 2015), as this research study covers all aspects of self-regulated learning as propounded by Lai and Gu, (2011) in terms of goal commitment, metacognitive, affective, social, resource and culture. This study is focused on answering two research questions: (1) how do the EFL learners use technology to regulate their language learning? (2) to what extent does technology acceptance correlate to the EFL learners' self-regulated learning? The findings are expected to contribute to the body of knowledge of technology usage in education, particularly in foreign language learning. The information resulted from this research would be valuable for teachers in order to set an appropriate strategy of effective teaching when technology is inseparable from the students' learning circumstances.

Method

An online questionnaire was administered to 111 EFL learners of a higher education in Indonesia to acquire data and depict the phenomena of self-regulated learning in technology-

mediated learning. Bivariate or correlation analysis and simple regression was conducted to see the relationship between technology acceptance (predictor variable) and each aspect of self-regulated learning (predicted variables) including goal commitment regulation, metacognitive regulation, affective regulation, social regulation, resource regulation, and culture regulation and to see contribution of technology to the each aspect. 102 of 111 EFL learners participated in this study to respond to the likert scale questions dealing with five aspects of self-regulated learning: (1) 3 likert-scale questions on goal commitment; (2) 6 likert-scale questions on metacognitive; (3) 7 likert-scale questions on affective; (4) 3 likert-scale questions on social; (5) 5 likert-scale questions on resource; and (6) 3 likert-scale questions on culture (as adopted from Lai and Gu, 2011) and technology acceptance model instrument as adopted from Fred Davis & Venkatesh (1996).

Interviews were conducted to get better and deeper descriptions depicting the participants' use of technology in regulating their learning experiences qualitatively. To this purpose, three selected participants performing the highest technology acceptance and self-regulated learning scores were interviewed.

Results
Technological Profiles of the Participants

The participants reported that they have internet access for language learning everyday: 52% for 1-2 hours, 23.5% for 3-4 hours, 14.7% less than one hour, 3.9% for 5-6 hours, and 6.9% for more than seven hours. The respondents who have joined the online course was 89.2% and have not joined was 10.8%. Meanwhile, their experience of using technology in their study can be described by the following: e-learning (91.2%), YouTube (79.4%), Google (70.6%), email (53.9%), blog (51%), web (50%), wikis (25.5%), podcast (2.9%), others (11.8%). The result show that their interest in technology makes them spend their time longer in their daily learning, while their knowledge about technology leads them to use different kinds of technology in their learning experiences. The e-learning activity indicates that the participants use a learning management system which provides online learning and promotes independent learning in which the participants are encouraged to use their learning strategy in order to achieve the learning goals.
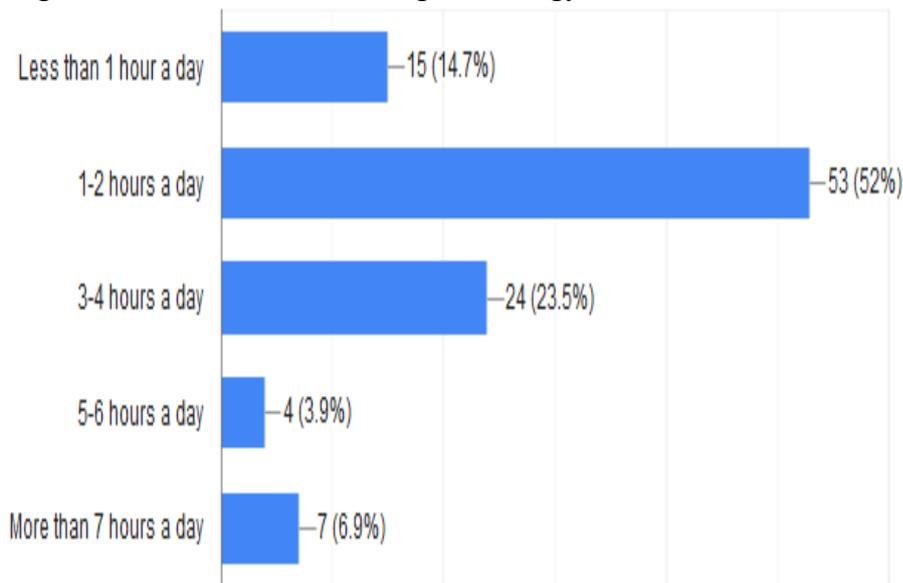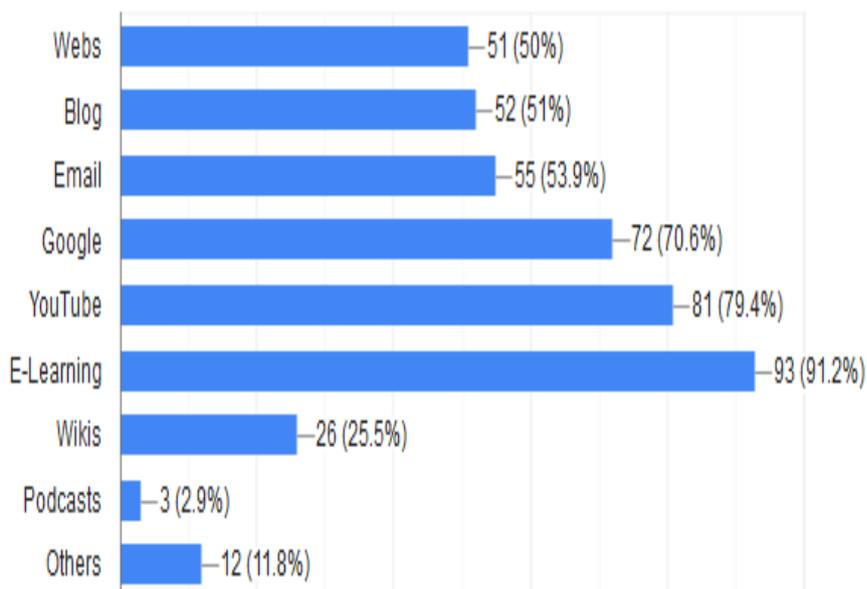
Figure 1. Period of time of using technology

Figure 2. Technologies used by participants

How the EFL Learners Use Technology to Regulate their Language Learning Experiences?

102 participants reported that technology regulates their language learning in variety of tools. Self-regulatory skills are actualised by the learners since the technology-mediated language learning occurs in the language classroom by the means of goal commitment, metacognitive, affective, social, resources and culture. However, to get deeper description towards how the learners use technology to regulate their language learning experiences, three selected

respondents showing the best three of technological acceptance and self-regulated learning scores were interviewed which allowed for qualitative data, as follows:

Self-regulated learners have beliefs showing consistency of keeping their interest in using technology as a source and tool by which their goals commitment could be kept or maintained. For instances, the respondents give reports that they perceive technology to effectively help their learning. "Webs and YouTube greatly influence my learning. The knowledge acquired from those tools helps me achieve my learning goal effectively and efficiently." (R1#Interview) "I do believe through regular use of technology, for example web visit contributes to my language performance." (R2#Interview) "According to my belief, webs and YouTube are the perfect sources or tools which can help me develop my language proficiency. (R3#Interview)

Meanwhile, the acquired data also described by the respondents pointed that technology regulates their metacognitive regulation. This can be admitted when they utilise technology to monitor their learning progress and English proficiency. "My English seems better and better from day to day, particularly on my listening skill and linguistic knowledge. Through visiting YouTube and webs, I can monitor my progress of learning." (R2#Interview) "Since technology provides a solution to my learning problem. I use technology regularly and appropriately to monitor my learning progress. For example Apps Orai and online dictionary are very helpful by which I can assess my speaking skill and build my vocabulary." (R2#Interview) "Webs for me is very helpful since I can improve my area of weakness, particularly on grammar problem. I am so satisfied because the webs give me the right solution." (R3#Interview)

In case of affective regulation, the respondents reported that technology encourages them get engaged with English since news, movies, webs, YouTube opens their minds towards English learning experiences. "Learning English through movies is very effective. I do this when I am feeling bored because I can still keep my interest in English anytime." (R1#Interview) "Webs are very attractive for me. There are many lessons I can take from the webs and podcasts which are suitable with my language level and interest. For example, britishcouncil.org is very helpful for improving my English in terms of language skills, grammar, vocabulary and other knowledge and makes me study longer. I love it so much!" (R2#Interview) Another respondent mentioned that YouTube opened her mind since learning English through songs made her more enthusiastic in learning English and reinforced her listening skill and pronunciation ability. (R3#Interview)

Through interviews, it is noted that the participants use social media almost every day to regulate their social relationship and build cultural awareness in which the learners use the technology as the strategy to communicate and share knowledge and culture with other

people in the world and solve their learning problems using Facebook, YouTube, Whatsapp. "In my experiences of using technology, the use of social media such as Facebook, Whatsapp, Twitter greatly help me get connected with my friends. We use video call to communicate our learning materials and make some plans for our tasks." (R1# Interview). The other respondents shared, "YouTube for me is like a window that I can share my life or my country to my friends and inspire them." (R2#Interview) "I get knowledge of target culture by watching YouTube. This technology enables me to learn the style of native speakers communicate in delivering the speech or making a dialog in a meeting." (R3# Interview).

The respondents also reported that they utilise technology almost every day to find learning resources to expand their learning experiences. Utilisation of webs, Google, and e-learning supports their English learning of which they can visit and take materials for their tasks.

"For me, Googling is the smart way to search relevant materials. It is hard to find printed materials, but Google leads me to the smart way. For example, when I have a task of making presentation slides, I easily find relevant materials from slideshare.net. I read and modify materials and put into my slides. The web really helps me complete my tasks." (R1# Interview)

The same description was received from other respondents in that e-learning helps them with learning resources and some practices to improve English language proficiency "E-learning provides materials as uploaded by the lecturer in the web. I just find the relevant materials easily for my task. Through e-learning, it is like I have an online library that can be visited anytime." (R2#interview) "I often visit webs particularly to assess my grammar and vocabulary. Many webs provide practices for grammar and vocabulary and test sessions. This greatly supports my learning." (R3#interview)

In short, the following table describes how the self-regulated learners regulate their language learning experiences once technology contributes to their aspects of self-regulation of learning.

Table 1: SRL actualised by the language learners in technology-mediated learning

Aspects of SRL	Technology-mediated learning experiences	Kinds of technology
Goal commitment	keeping interest in learning English achieving learning goals effectively and efficiently	YouTube, webs

Metacognitive	monitoring learning progress and English proficiency	YouTube, Webs (e.g. britischcouncil,org), Apps (e.g. orai, online dictionary)
Affective	get engaged with English learning open minded avoid feeling boredom enthusiastic learning experiences	Podcast, movies, Webs, YouTube
Social	building social relationship communication skill global communication	Social media (twitter, Facebook, whatsapp), YouTube
Resources	expand learning experiences learning materials	e-learning, Webs, Podcast, Google
Culture	cultural awareness multicultural communication skill	

Correlation of Technology Acceptance to the Language Learners' Self-regulated Learning

In the quantitative analysis, measurement of technology-mediated language learning is conducted to see the learners' technology acceptance by adopting the Technology Acceptance Model instrument as developed by Fred Davis & Venkatesh (1996). Meanwhile, to measure the learners' self-regulated learning, instrument by Lai & Gu, (2011) is adopted which includes goal commitment, metacognitive, affective, social, resource, and culture regulations.

Using SPSS version 23, correlation analysis was administered to see the correlation of the use of technology (predictor variable) and six aspects of self-regulate learning (predicted or criterion variables) with level of significance 5%. The analysis is conveyed to answer the hypothesis of the research and it is found there is positive and significant correlation between the use of technology and the six aspects of self-regulated learning as actualised by the language learners.

It is found there is a significant and positive correlation between technology and self-regulated learning (r=0.605). It also means the higher technology acceptance the learners have the higher self-regulated learning will be.

Table 2: Significance of correlation between technology and self-regulated learning

Correlations		ICT	SRL
ICT	Pearson Correlation	1	.605**
	Sig. (2-tailed)		.000
	N	102	102
SRL	Pearson Correlation	.605**	1
	Sig. (2-tailed)	.000	
	N	102	102

**. Correlation is significant at the 0.01 level (2-tailed).

We are also able to find the significant correlation between technology and each aspects of the self-regulated learning as follows:

Table 3: Correlation of technology acceptance on each aspects of self-regulated learning

Correlations		ICT	GOC	MET	AFF	SOC	RES	CUL
ICT	Pearson Correlation	1	.537**	.527**	.446**	.505**	.417**	.431**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	102	102	102	102	102	102	102
GOC	Pearson Correlation	.537**	1	.566**	.452**	.486**	.518**	.417**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
	N	102	102	102	102	102	102	102
MET	Pearson Correlation	.527**	.566**	1	.535**	.646**	.490**	.423**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
	N	102	102	102	102	102	102	102
AFF	Pearson Correlation	.446**	.452**	.535**	1	.655**	.530**	.404**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
	N	102	102	102	102	102	102	102
SOC	Pearson Correlation	.505**	.486**	.646**	.655**	1	.598**	.515**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000

		102	102	102	102	102	102	102
RES	Pearson Correlation	.417**	.518**	.490**	.530**	.598**	1	.640**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
	N	102	102	102	102	102	102	102
CUL	Pearson Correlation	.431**	.417**	.423**	.404**	.515**	.640**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	102	102	102	102	102	102	102

**. Correlation is significant at the 0.01 level (2-tailed).

It can be explained that technology acceptance correlates with goal commitment (r= 0.537) significantly. In terms of goal commitment, the participants use technology to keep their interest in learning English and achieve learning goals effectively and efficiently.

The result also describes that there is a significant correlation between technology and metacognitive (r= 0.527) in which the participants use technology to make planning tasks, acquire information, improve their knowledge, enhance learning, and self-monitor in order to achieve the learning goals.

There is significant correlation between technology and affective regulation (r= 0.446) in which the participants use technology to maintain their interest and enthusiasm in learning language effectively.

There is significant correlation between technology and social regulation (r= 0.505). Technology regulates the learners social relationship in which the learners use technology as the strategy to encourage them in language learning by connecting with peers either local or around the world or find a connection with native speakers of the language in order to enhance their language learning.

There is significant correlation between technology and resources regulation (r=0.417). Technology helps learners expand their learning resources, create and increase opportunities to learn and use the language in order to achieve the learning goals.

There is significant correlation between technology and culture regulation (r=0.431). Technology helps the learners understand culture of the language and facilitate them to interact with the target culture, and build cultural awareness and multicultural communication skill.

Discussion

Self-regulated learning represents a major topic in education field and can be predictor for academic achievement (Zheng et al, 2016; Zimmerman & Kitsantas, 2014; Lai & Gu, 2011; Zimmerman, 2000; Dignath et al., 2008; Schraw et al., 2006; Schunk & Srtmer, 2000). Some studies discovered that high-achieving learners can be characterized as self-regulated learners (e.g. Pintrich, 2000; Schraw, Crippen, & Hartley, 2006; Zimmerman, 2008)

Based on the empirical data, some ideas are important to discuss to how language learners regulate their language learning when technology mediated learning occur in language classroom. The data from resulted surveys and interviews indicat that technology may help language learners regulate their goal commitment since they perceive technology as an important source and can maintain their interest to achieving their learning goal. A drive to attain the learning goals and commitment are the characteristics of higher self-regulated learners (Pintrich, 2004) and technology builds positive learning engagement by which the learners set their goal commitment to achieve the learning goal (Lai and Gu, 2011).

Technology regulate learners' metacognitive in which they use technology to plan tasks, acquire information, improve their knowledge, enhance learning, and self-monitor in order to achieve the learning goals. As Mc Donough (2001) stated that metacognitive regulation is characterised by such strategies as planning, monitoring, and evaluating one's learning activities and using selective attention. It can be implied that language learners should be engaged with technology and use it to support their language learning experiences in connection with metacognitive strategy development (Celik et al., 2012; Lai and Gu, 2011).

Technology regulates learners' affection in terms of maintaining their interest and enthusiasm in learning language effectively, open minded, and engaging with English. This could happen since the language learners have a positive perception towards technology. Affective regulation is considered as an aspect of self-regulated learning showing willingness to make efforts and persistence (Vrugut & Oort, 2008).

Technology regulates learners social relationship in which the learners use technology as the strategy to encourage them in language learning by connecting with peers either local or around the world or connecting with native speakers of the language in order to enhance their language learning. This finding indicates that technology-mediated learning provides learners with a sense of social connection or interaction opportunities Ala-mutka (2009) and authentic language by having connection with native speaker of the language (Golonka *et al*., 2014).

Technology helps learners expand their learning resources, create and increase opportunities to learn and use the language in order to achieve the learning goals. Candy (2004) identifies that technology facilitates learners' self-regulated learning by providing them with plentiful learning resources. Liu (2017) noted that when information is needed by language learners in solving problem in their own learning it is not inadequate for it to be provided by their mentor, then they have to seek external help from another. An online source becomes the solution by which their self-regulation skills shaped or built.

Technology helps the learners understand culture of the language and facilitate them to interact with the target culture and build multicultural communication skills. The significant components of self-regulated learning is considered to be social and to be able to enhance cultural understanding (Lai & Gu, 2011; Zimmerman, 2000).

Conclusion

This study reveals that there is a significant and positive correlation between technology acceptance and self-regulated learning. The result of interview also reported that the respondents use technology to regulate their language their learning experiences through various self-regulatory skills of learning and purposes. Their technology acceptance lead them to create technology-mediated language learning in which the participants use such kinds of technology: e-learning, webs, YouTube, Podcast, movies or videos, Apps, WhatsApp etc. to support and expand their learning experiences.

Since technology acceptance contributes to self-regulated learning, ideas of ICT integration into language learning classroom becomes very important. Technological self-regulated learning may become the learners' own strategic efforts to manage their own achievement through specific beliefs and processes (Zimmerman & Risemberg, 1997) in which learners employ technology to activate and maintain cognitions, emotions, and behaviours to achieve personal goals (Zimmerman & Kitsantas, 2014).

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