Self-Directed Informal Digital Learning of English: Identifying Its Nature and Activities for English Proficiency

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Abstract

Self-Directed Informal Digital Learning of English (SD-IDLE) plays a crucial role in informal language learning. This study aims to examine the SD-IDLE nature of English learning among Indonesian university students and its impact on language learning and personal development. The research used a sequential explanatory mixed methods design, employing a questionnaire and semi-structured interviews as research tools. Data were collected from 302 Indonesian university students enrolled in various EFL classes at three universities. The study revealed that the nature of SD-IDLE activities was significantly associated with the English proficiency of EFL students, although the results for each component varied. The nature of self-management and monitoring activities showed a significant positive correlation with students' English proficiency, while the nature of self-motivation activities displayed a negative correlation. In conclusion, students who actively engaged in the nature of SD-IDLE activities such as good goal commitment, resource needs, metacognition, and broad social communication needs demonstrated higher English proficiency. However, students who relied solely on motivation did not consistently achieve successful English proficiency scores.

INTRODUCTION

Language learning outside the classroom has significantly contributed to second and foreign language acquisition. Students' learning activities outside the classroom also influence their perception of the formal environment at school. Research has shown that increased exposure to meaningful practices increases learners' global motivation to learn and changes their habits to support formal English learning and achieve better learning outcomes (Lai et al., 2015; Toffoli & Sockett, 2015; Trinder, 2017).

Studies have examined students' language learning activities outside the classroom in various terms, namely out-of-class, extra-curricular, independent learning, autonomous learning, informal learning, and many others. The nature of informal learning is aimed at expressing unstructured objective and uninstructed pedagogical learning processes (Livingstone, 2001; Schugurensky, 2000; Sockett, 2014; Toffoli, 2020).

Studies on informal language learning activities have also been known with several terms. Fully autonomous self-instructed learning (FASIL) (Cole & Vanderplank, 2016), self-regulated out-of-class language learning with technology (Lai et al., 2015; Lai & Gu, 2011), extramural English (EE) (Sundqvist, 2009a; Sundqvist & Sylvén, 2014, 2016; Sundqvist & Wikström, 2015; Sylven & Sundqvist, 2012), online informal learning of English (OILE) (Sockett, 2013, 2014; Toffoli & Sockett, 2015), and informal digital learning of English (IDLE) (J. S. Lee, 2019a, 2019b, 2019c; J. S. Lee & Dressman, 2018) are some terms used to show students' engagements in informal English learning. Even though they may seem different in terminologies, in this study those terms and another new term for this study are considered similar in that they represent the same purpose of investigating students' English learning activities beyond the classroom setting.

Among other terms, the nature of IDLE by J. S. Lee (2018) resembles the concepts examined in this study, which used four dimensions of out-of-class learning from Benson (2011b), including location, formality, pedagogy, and locus of control (J. S. Lee & Dressman, 2018). However, an additional element of self-directed learning is an important component of the dimension in this research. Learners' self-directedness is one of the keys to the success of the learners' out-of-class learning activity, as students' lack of agency in their language learning seems to impede the benefits of language acquisition (Cole & Vanderplank, 2016; Lai et al., 2015; Lyrigkou, 2019). In this inquiry, the framework of informal digital learning of English is modified with the nature of self-directed learning by Garrison (1997) to see the contribution of students' awareness in learning English beyond the classroom from the concept of three comprehensive models of self-directed learning (self-management, self-monitoring, and self-motivation). For further discussion, the framework is called self-directed informal digital learning of English (henceforth SD-IDLE).

As a form of language learning beyond the classroom, SD-IDLE meets the needs of EFL students to learn English. Considering today's knowledge-based society, learners are required to take more responsibility and initiative to arrange their learning processes, which refers to self-direction as lifelong learning. Self-directed learning allows students to hold the fort by determining what and how to learn, with or without the supervision of others in their learning (Merriam, 2017). Furthermore, the use of ICT for learning affects students' pronouncements on SD-IDLE practices by empowering them to find and assess information, follow their interests, use a variety of information resources, and communicate with peers and experts (K. S. Lee et al., 2014; Teo & Koh, 2010).

Many studies on informal learning have been conducted to see its contribution to learners' language cognitive and affective variables. Informal language learning activities show significant contribution to students' affective variables, including willingness to communicate, confidence

in making conversations, low anxiety and high learning motivation (Butler et al., 2014; Lai et al., 2015; Lamb & Arisandy, 2019; J. S. Lee, 2019c; J. S. Lee & Drajati, 2019a; J. S. Lee & Dressman, 2018; J. S. Lee & Hsieh, 2019; J. S. Lee & Lee, 2019b; Reinders & Wattana, 2014, 2015; Sundqvist & Sylvén, 2014). However, in terms of cognitive variables, informal language learning activities yield various results which makes it the main concern of this study.

Researchers all over the world have become more interested in informal learning in various EFL contexts due to the development of technologies and their potential for learning outside of the classroom, including Brazil (Cole & Vanderplank, 2016), China (Chen, 2013; Lai et al., 2015; Sun et al., 2017), Denmark (Jensen, 2017), France (Kusyk, 2017; Kusyk & Sockett, 2012; Sockett & Toffoli, 2012; Sockett, 2013, 2014), India (Mitra et al., 2003), Indonesia (Lamb & Arisandy, 2019; J. S. Lee & Drajati, 2019a, 2019b), Japan (Casanave, 2012), Malaysia (Tan et al., 2010), Morocco (Dressman, 2020), Russia (Kozar & Sweller, 2014), South Korea (J. S. Lee, 2019a, 2019b, 2019c; J. S. Lee & Dressman, 2018; J. S. Lee & Lee, 2019a), and Sweden (Sundqvist, 2009a, 2009b; Sundqvist & Sylvén, 2014; Sundqvist & Wikström, 2015).

Previous studies on informal learning conducted in Indonesia are focused on the affective aspect. The correlation between out-of-class language learning and learners' motivation (Lamb & Arisandy, 2019) shows that Indonesian teachers have no choice but to acknowledge the emerging progress of technology in education and modify their classroom practice through technology-enhanced language teaching. The primary intention is to encourage students' autonomous learning with technology into language education opportunities outside the classroom to enrich pedagogical insight into how informal digital learning can complement both inside and outside-of-class learning. Research on willingness to communicate (J. S. Lee & Drajati, 2019a) found that informal learning activities were identified to have a significant contribution to Indonesian students' affective variables, including grit, self-confidence, motivation, and willingness to communicate.

Considering that the aforementioned studies are still inconclusive on the point of whether informal language learning activities with their nature as the inherent characteristics that exist independently done without being instructed by others are linked with students' cognitive aspect, further research is needed to confirm this issue. The research question formulated to investigate what aspects of SD-IDLE activities contribute to language proficiency is as follows:

What is the correlation between the nature of SD-IDLE activities and EFL students' English proficiency?

LITERATURE REVIEW

Self-Directed Informal Digital Learning of English (SD-IDLE)

In the Web 2.0 era, digital technology is developing, and the advancement of digital technology has made it easy to learn other languages using various methods. Today, students no longer

rely on individual textbooks, classical texts, or essays, and people can build online communities that have significant influences on the learning process (Peters, 2009). Studies have been conducted to implement informal learning using several Web 2.0 technologies which show positive contributions to ELT, such as the utilization of digital media on smartphones and tablets, to enable users to communicate and collaborate actively (Chan, et al., 2015; Falloon & Khoo, 2014; Han & Shin, 2016; Haßler et al., 2016; Khaddage et al., 2016; Kim et al., 2016; Kukulska-Hulme, Gaved, et al., 2017; Kukulska-Hulme, Lee, et al., 2017; Major et al., 2017), video blog and movies (Combe & Codreanu, 2016), song and music (Ludke, 2009), social media (Al-Rahmi et al., 2015; Hrastinski & Aghaee, 2012), apps or online platforms (Arvanitis, 2020; Sauro & Sundmark, 2019), and online games (Iacovides et al., 2011; Knight et al., 2020; Sadler, 2020; Su & Cheng, 2015; Sundqvist, 2019c; Sundqvist & Wikström, 2015; Sylven & Sundqvist, 2012; Woo, 2014). As digital media devices and technology are tools for practicing and learning a language outside the classroom, SD-IDLE as the term that is used in this study, provides English learning opportunities to individuals who learn second or foreign languages digitally to gain an improvement of English knowledge and skills.

One of the differences between English as a foreign language (EFL) and English as a second language (ESL) context is that EFL learners usually do not have the opportunities to use the L2 outside the classroom (Oxford & Shearin, 1994). SD-IDLE provides a chance to cross the border of the differences. Clément et al. (2003) state that L2 conversation with a native speaker or a more competent fellow student using technology can be an informal language acquisition context if learners are willing to talk to learn. Besides providing beneficial and unconscious use of English as an international language to EFL students to get the English environment outside the classroom, SD-IDLE also offers an opportunity to learn about other cultures.

The nature of SD-IDLE

Taking into account the increased interest in comprehending language learning in Computer Assisted Language Learning (CALL) environments outside of the classroom (i.e., SD-IDLE), Benson (2011a) proposes four dimensions of outside classroom second language learning, namely formality (whether or not the experience of learning a language is formally arranged and a certificate is awarded: e.g., formal, non-formal, or informal), location (where language acquisition takes place: e.g., in-class, out-of-class, extracurricular, and extramural), pedagogy (how much-authorized language learning procedures are used: e.g., instructed, self-instructed, and naturalistic), and locus of control (how many languages learners take charge of their education; e.g., self-directed or other-directed). Although Benson himself has admitted that this is a very primitive method, this construction nonetheless aids our understanding of English learning in various SD-IDLE scenarios (Chik, 2014).

Another dimension that the nature of SD-IDLE uses is presented by Schugurensky (2000) who focused on defining informal learning in three characteristics: socialization, incidental and self-directed learning. The internalization of values, attitudes, behaviors, and abilities that are present in daily life is referred to as socialization. Socialization means activities to behave in a way acceptable to society without any intention or awareness to study. Incidental learning refers to learning experiences that occur when the learner has no prior intention to learn from

the experience. However, after the experience, they realize they have learned something. So, this is unintentional. On purpose, self-directed learning refers to learning projects undertaken by an individual without the assistance of an educator but may involve the presence of resources not considered educators. Self-directed learning is therefore intentional and mindful.

Finally, the learning dimension used in the nature of SD-IDLE comes from Garrison's (1997) model of self-directed learning. This concept includes self-management (task control), self-monitoring (cognitive responsibility), and motivation. Self-management deals with implementing learning goals and managing learning resources and assistance. Self-control involves learning strategies and cognitive and metacognitive processes for monitoring the recognition and modification of thinking based on learning goals. Finally, in terms of tremendous practical impact, self-motivators play a very important role in initiating and sustaining learning efforts and achieving cognitive goals. Table 1 provides the nature of SD-IDLE based on the dimensions of Benson (2011a), Schugurensky (2000), and Garrison (1997).

Table 1

The nature of SD-IDLE

	SD-IDLE
Location	out of class
Formality	Unstructured
Pedagogy	Self-instructed
Locus of Control	**Self-Directed** (with intentional and awareness): • Self-Management • Self-Monitoring • Self-Motivation

In an extracurricular setting, the nature of SD-IDLE activities is self-directed, naturalistic digital English learning in an unstructured environment outside the classroom as the independent activities of formal language programs. For example, students can use their initiative to chat and interact with other English users on Facebook. However, if this chat is part of their academic work in a CALL environment outside the classroom, it is considered SD-IDLE and an extracurricular context.

METHODOLOGY

Research design

The study is aimed at exploring the correlation between self-directed informal digital learning of English (SD-IDLE) and EFL students' English proficiency. The purpose of this study is to investigate the contribution of SD-IDLE nature activities to EFL students' English proficiency. This research data was obtained by employing surveys and in-depth interviews.

Research setting and participants

The participants of this study were in total 302 EFL students from two public universities and one private university in a medium-sized town in East Java, Indonesia. The student participants of the present study came from different levels of learning years and a range of majors who had SD-IDLE engagement.

Out of the total cohort of EFL students, 67 were male, while 235 were female, residing across diverse regions in Indonesia. They voluntarily participated by completing and submitting an online questionnaire. Among the participants, there was a diverse distribution in study majors: 216 students belonged to the English Department, while 86 represented various other departments such as Accounting, Nursing, Informatics Engineering, Economics, and more. These participants encompassed university freshmen, sophomores, juniors, seniors, and graduates, with an average age of 20.9, from 18 to 27 years old.

Table 2

Demographic data of the participants in the questionnaire

Variable	Indicators	Total (N = 302)	
		N	%
Gender	Male	67	22.2%
	Female	235	77.8%
Major	English Department	216	71.5%
	Non-English Department	86	28.5%
Level	Freshman	121	41.3%
	Sophomore	58	20.2%
	Junior	54	19.5%
	Senior	46	16.6%
	Graduated	23	2.4%

For an in-depth exploration of the relationship between the nature of SD-IDLE activities and English proficiency, a semi-structured interview was conducted with 12 students. These participants willingly provided their responses and actively engaged in the interview, which served as an additional investigative phase in the research process.

Research instrument and data collection

Questionnaire

The development of the questionnaire, as suggested by Deng et al. (2020), started with the procedure of Item Generalization and Reduction by reviewing literature about English language learning beyond the classroom based on the dimensions of SD-IDLE which were classified into three sub-variables, namely self-management, including goal commitment and resource needs; self-monitoring, including metacognition and social connection needs; and self-motivation,

including attitudinal needs to describe the students' engagements in the activity of informal English learning to increase their ability in English skills (listening, speaking, reading, and writing).

The subsequent phase involved creating a blueprint for the research instrument, specifically outlining the questionnaire items. The questionnaire comprised two sections. The initial segment focused on demographic information, encompassing inquiries related to participants' background, including university name, semester level, gender, major, English Proficiency score, as well as the frequency and diversity of engagement in SD-IDLE activities (length of time and variety of activities involved in learning English). The second section probed into the nature of students' SD-IDLE activities. This part entailed 20 open-ended questions adapted from Lai et al.'s study (2015) (refer to Appendix 1 for details). These questions were designed to elicit responses regarding the specific nature and characteristics of the participants' SD-IDLE activities.

The original English questionnaire items were translated into Indonesian and checked for the instruments' clarity and precision using both forward- and backward- translations. To further refine the items, an expert validation process was executed. This involved a review by experts, specifically chosen based on stringent criteria: individuals holding doctoral degrees with a minimum of 10 years of experience in teaching English, who had previously served as validators in English studies, particularly in informal learning.

The second procedure is Item Purification, where data were collected together with a pilot survey carried out to reconfirm the face validity of the items. The items retained after the pilot study were then subjected to an item purification study in the third procedure; Construct Validation of Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) showed that the questionnaire items were reliable and valid.

English proficiency score

To assess students' English proficiency, standardized English ability scores derived from their previous English Proficiency Tests were utilized, offering a comprehensive insight into their language competencies. In the questionnaires, students were instructed to provide their English Proficiency Test scores from the test taken within the past two years administered by their universities.

Semi-structured interview guide

To complement the quantitative data gleaned from the questionnaire and gain deeper insights into emergent phenomena, a qualitative approach was incorporated using a semi-structured interview guide.

Participants who consented and completed the questionnaire were engaged in the processing of a semi-structured interview guide. The objectives encompassed several facets: (a) validation of students' quantitative responses provided in part 1 of the interview guide, such as their English Proficiency score and engagement in SD-IDLE activities, (b) digging into their questionnaire responses, (c) exploring their perceptions and expectations regarding formal classroom settings,

and (d) eliciting details about the nature of their SD-IDLE activities, as specified in part 2 of the interview guide.

Conducted via Zoom for approximately 30-60 minutes per participant, the interviews were carried out in both English and Indonesian languages for convenience. Immediate transcription of the interviews was undertaken post-session to ensure a comprehensive capture of each participant's conveyed meanings. Additionally, researchers made notes on salient points during the interviews.

Before finalizing the items in the semi-structured interview guide, an exploratory survey in the form of a pilot study was conducted. This survey aimed to refine and clarify the questions, ensuring they were comprehensible and conducive to eliciting informative responses from the participants.

Data analysis

In this study, quantitative analysis was conducted using statistical software such as SPSS Statistics or JASP 13. To address the research question, survey response data adapted from Lai et al. (2015)'s framework on the Nature of Out-of-Class English Learning was employed as an analytical framework to examine EFL students' SD-IDLE activities. The survey data underwent analysis using the Pearson Product Moment correlation method to elucidate the relationship between SD-IDLE activities and English proficiency. The Correlation analysis aimed to ascertain whether a significant positive relationship exists between SD-IDLE activities and the English proficiency levels of EFL students.

Regarding the qualitative findings, the data obtained from the semi-structured interviews underwent transcription, organization, coding, and synthesis using N-Vivo R.14.1 software. Given that the foundational framework of SD-IDLE activities relied on students' informal learning experiences outside the classroom, the qualitative validation of these activities involved conducting double-checked interviews within the participant group. This process ensured a thorough verification of the actual activities engaged in by the students.

FINDINGS

The results of the study have been framed by the nature of the SD-IDLE experiences and the contribution of these experiences to English proficiency. The students' attitudes toward English and SD-IDLE materials and activities were discussed in relation to these experiences. The contribution of SD-IDLE experiences to the language gains and personal development of students were also reviewed under learning outcomes.

Correlation between EFL students' nature of SD-IDLE activities to English proficiency

Among the 302 students assessed, the mean score for the nature of SD-IDLE activities was 79.1 on a scale ranging from 20 to 100, or 3.92 on a Likert scale ranging from 1 to 5. The mode

score was 80 (or 4 on the Likert scale), with a standard deviation of 8.89. These values suggest that the majority of students were in agreement with the statements pertaining to the nature of SD-IDLE activities.

However, the English Proficiency scores of the EFL students ranged from 310 to 570, with a mean score of 430.971 and a mode of 400. These scores suggest that the student's English Proficiency generally fell within the minimal range, categorized as limited users (as outlined in Table 3).

Table 3

Level of TOEFL score (Tannenbaum & Baron, 2011)

TOEFL PBT Score	IELTS Description
667 - 677	Expert User
657 - 663 637 - 653	Very Good User
610 - 633 587 - 607	Good User
550 - 583 500 - 547	Competent User
453 - 497 417 - 450	Modest User
400 - 413	Limited User
0 - 397	Extremely Limited/ Intermittent/Non-User

Table 4 displays the correlation results between the nature of SD-IDLE activities and English proficiency, revealing a Pearson's r value of .153 and a p-value of .008. This outcome indicates a significant correlation between the nature of SD-IDLE activities and English Proficiency at a 1% level of significance, although the strength of the correlation (coefficient correlation of .153) is relatively modest.

Table 4

Pearson's correlations of the nature of SD-IDLE and English proficiency

Variable		English Proficiency
Nature of SD-IDLE	Pearson's *r*	.153 **
	p-value	.008

*$p < .05$, **$p < .01$, ***$p < .001$

Moreover, the insights derived from in-depth interviews support these findings. The interviews highlighted that a considerable number of EFL students displayed a genuine interest in learning English as a hobby, often utilizing digital applications on their gadgets as a primary learning tool.

For further details, findings of the correlation between the components of SD-IDLE nature activities to English proficiency are elaborated below:

1. Correlation between EFL students' nature of self-management in SD-IDLE activities to English proficiency

The Self-Management component within the nature of SD-IDLE activities reflected a mean score of 37.5 within a range of 9 to 45, or an average scale of 4.16. This signifies that a majority of students aligned with the statements pertaining to Self-Management in the questionnaire.

When examining the correlation between SD-IDLE's Self-Management and English proficiency, a significant correlation emerged, with a Pearson's r value of .163 and a p-value below the 1% level of significance. Delving deeper, within Self-Management, the components of Goal Commitment and Resource Need displayed noteworthy correlations. Specifically, Goal Commitment exhibited a significant correlation with a Pearson's r value of .139, reaching significance at 5%. Additionally, Resource Need showed a substantial correlation with a Pearson's r value of .151, reaching significance at the 1% level (as illustrated in Table 5). These results underscore the significant correlations between Goal Commitment, Resource Needs, and English Proficiency.

Table 5

Pearson's correlations of self-management and English proficiency

Variable		English Proficiency
Self-management	Pearson's *r*	.163 **
	p-value	.004
Goal commitment	Pearson's *r*	.139 *
	p-value	.016
Resource needs	Pearson's *r*	.151 **
	p-value	.008

*$p < .05$, **$p < .01$

Regarding Goal Commitment, it was observed that all EFL students unanimously acknowledged the importance of utilizing technology in English learning for their future career aspirations. Furthermore, a substantial portion of students actively established English learning goals and structured their English study hours accordingly. Here are some of the transcript interviews with pseudonyms for all participants:

The importance of playing an active role in English learning using technology

Ro:
I have a motivation that I have to speak English fluently and I can read English without open the dictionary. So that is the goal that I put in myself. So more than hobby because I put the pressure to myself.

Organizing English learning hours

Ro:
I set how many articles that I read in a week and then how many videos I watch in a week, but mostly for the video, like TEDTalk I always listens before I go to bed every night. The article that I have may be at least 30 pages in English, I have to read in a week.

The students' Self-Management regarding Resource Needs indicated various strategies they commonly employed. Many students reported utilizing automatic grammar and spelling error detection tools, accessing English learning websites, watching videos, utilizing electronic or online dictionaries, self-recording for self-assessment, engaging with English songs through listening and singing, composing social media comments in English, reading daily English news online, and using applications to check pronunciation and expand vocabulary during their English learning journey. In their approach to watching English movies, most students preferred to view them either with English or Indonesian subtitles, citing different reasons for their choice. However, activities such as listening to podcasts and playing games in English were less favored among the majority of students. These preferences and practices offer insights into the diverse strategies students employ to manage their English language learning resources, indicating a range of approaches utilized by the cohort in their self-directed learning endeavors.

2. Correlation between EFL students' nature of self-monitoring in SD-IDLE activities to English proficiency

The mean score for students' Self-Monitoring was 26.4 within a score range of 7 to 35, equating to an average scale of 3.8. This suggests that the majority of students agreed with the statements concerning Self-Monitoring. Analyzing the correlation between SD-IDLE activities of Self-Monitoring and English proficiency, a notable correlation emerged, indicated by a Pearson's r value of .140 and a p-value below the 5% level of significance. Delving deeper into Self-Monitoring, the components of Metacognition and Social Connection Needs displayed significant correlations. Specifically, within Metacognition, there was a significant correlation with a Pearson's r value of .129 and a p-value of .025. Similarly, the Social Connection Need component exhibited a significant correlation with a Pearson's r value of .118 and a p-value of .041 (as illustrated in Table 6). These findings underscore the significant correlations between Metacognition, Social Connection Needs, and English Proficiency.

Table 6

Pearson's correlations of self-monitoring and English proficiency

Variable		English Proficiency
Self-monitoring	Pearson's *r*	.140 *
	p-value	.015
Metacognition	Pearson's *r*	.129 *
	p-value	.025
Social connection needs	Pearson's *r*	.118 *
	p-value	.041

*$p < .05$

This suggests that Metacognition and Social Connection Needs within the Self-Monitoring variable are significantly associated with English Proficiency at a 5% significance level, indicating their potential influence on students' language proficiency.

On Metacognition, all students stated that they used the internet/applications to help them with their assignments, find good resources for their English learning, note/highlight important

parts while reading English texts, use different applications for learning different English skills, and do self-assessment. Here are some of the transcripts from the interviews:

Using different digital learning platform or application for different English learning subjects

I:
Yes, when I want to train my listening, I watch some video in Instagram or in YouTube like English with Lucy, but when I want to learn some speaking how have good pronunciation, I choose cake application.

N:
I have each application and website to learn English skills, like listening I usually use Derman studios in Instagram, and reading I usually use BBC Learning English or English news, for the writing, I just read an article.

V:
I differentiate the apps. For listening, I have the podcast from my phone, and I also download the BBC. But for speaking, I guess I use WhatsApp sometimes.

Assessing the objective and outcomes that set up at the beginning of English digital learning process

I:
Maybe I can assess my goal with like some quizzes in online quizzes. So, when I try to assess my listening, so I open U dictionary and find like quizzes there, because in U dictionary, I can assess my listening with listening some conversation, or some music like that, ma'am. And in speaking, I would like to assess myself to open cake application, because in cake application, we can imitate some conversation and we can have a grade or we can have a score when we have already done the test. I record my speech in recording and I listen it to myself to check my pronunciation

Su:
I only assess myself when I speak to someone and when I try to explain something to a friend, because I don't have any assessment for myself whether I have improved or not, but then I can feel within myself that if I speak smoother or fun frontier than before, it means that okay, maybe I have improved.

3. Correlation between EFL students' nature of self-motivation in SD-IDLE activities to English proficiency

The mean score for students' Self-Motivation was 15.2 within a score range of 4 to 20. The mean scale was 3.8. This suggests that a majority of students agreed with the statements regarding Self-Motivation in their SD-IDLE activities. However, when exploring the correlation between SD-IDLE activities of Self-Motivation and English Proficiency, specifically in the context of Attitudinal Needs, the correlation was found to be relatively weak. Pearson's r value between

Attitudinal Needs and English Proficiency was r = .083, with a p-value of .151. This outcome indicates that there was no significant correlation between Self-Motivation and English Proficiency, as the p-value exceeded the 5% level of significance (as indicated in Table 7).

Table 7

Pearson's correlations of self-motivation and English proficiency

Variable		English Proficiency
Self-Motivation:	Pearson's *r*	.083
Attitudinal Needs	*p*-value	.151

*$p < .05$, **$p < .01$, ***$p < .001$

Insights derived from the students' interviews concerning Self-Motivation, particularly in the realm of Attitudinal Needs, highlighted that all students expressed a genuine enjoyment for learning English as a hobby, showcasing high motivation toward learning the language. However, some students also admitted to occasional lapses in confidence, especially during conversations with lecturers or strangers. These qualitative insights offer a nuanced perspective on the interplay between motivation, confidence levels, and their impact on English language proficiency among the students. Here are some of the transcripts from the interviews:

Learning English for enjoyment

Ro:

I do enjoy learning English. Because maybe at first in the vocational high school I like(d) joining (to join) many competitions, speech or debate competitions. And I think (thought) at that time, when I mastering (mastered) in English, I can (could) learn a lot of things than just a language.

Motivation to learn English independently by using digital learning application

Ro:

English community give me a power I think, because I can learn many issues by having an English itself like I learned about politics, I learned about democracy, I learned about citizenship, everything about it because it relates with debating, and that is also using English. So, at the same time I love it because it I love the issues and I love how to deliver the argument using it using English. So that is the combination where I do love learning English. It so maybe is because I love speaking English. And then I love debating…I have a motivation that I have to speak English fluently and I can read English without open the dictionary… Mostly high the motivation because I set a goal. I set like, Oh yeah, I have to have like capacity in English… if we only have a willingness to learn English even though in using technology and digital application, but without motivation and without a goal, a certain goal, so it's nothing.

DISCUSSION AND CONCLUSION

The study investigated the SD-IDLE (Self-Directed Informal Digital Learning of English) behaviors among university EFL students in Indonesia and sought to determine whether a correlation existed between these activities and English proficiency. Findings from the questionnaire revealed a significant relationship between the overall nature of SD-IDLE activities and the English proficiency levels of the EFL students. Essentially, students who affirmed engagement in SD-IDLE activities showcased improved English proficiency.

However, when scrutinizing the various components of SD-IDLE activities, divergent results emerged. Specifically, the Self-Management and Self-Monitoring components within Self-Directed Informal Digital Learning of English demonstrated a noteworthy correlation with students' English proficiency. This suggests that students agreeing with statements related to high goal commitment, resource needs awareness, metacognition, and extensive social communication tendencies made notable contributions to their English proficiency. Conversely, unlike other SD-IDLE components, the Self-Motivation aspect within Self-Directed Informal Digital Learning of English showed no correlation with students' English proficiency. This indicates that high motivation, as reported by students, did not consistently yield improvements in their English proficiency.

Today, most students enjoy utilizing devices for both entertainment and educational purposes. Agreement by an EFL student participant with a reported SD-IDLE engagement implied their use of digital applications for informal English learning. It's widely acknowledged that digital applications significantly motivate students to learn English. Enthusiastic students are often intrinsically motivated by curiosity, interest, pleasure, and personal goals. Enhanced motivation tends to yield better task completion and overall performance (Maddox et al., 2013).

However, despite the significant correlation observed between student engagement in SD-IDLE activities and English proficiency, self-reported English proficiency levels remained notably low. A minority of learners engaged extensively in digital English learning over extended periods. Among the 302 respondents, only 22 students (7%) had been engaged in digital English learning for over 5 years, while 161 students (53%) had engaged in such learning for less than a year, classified as infrequent SD-IDLE participants. Studies such as those by Sung et al. (2016) and Sung et al. (2015) have also indicated that online learning periods of less than a week generally do not significantly contribute to language proficiency.

Factors influence self-directed informal digital learning of English contribution to English proficiency

The advantages of SD-IDLE activities in technology engagement are freedom of learning, independence with no boundaries, and informal, and beyond the classroom settings. However, in some conditions, the results of SD-IDLE activities are not as expected. Here are some factors that may influence the contribution of SD-IDLE activities to EFL students' English proficiency:

Factor 1: Agency

Successful online language learning encompasses more than high motivation and freedom from fear. Commitment, intention, and awareness of learning goals—referred to as agency—are key aspects crucial to effective language acquisition.

Fundamentally, learners' behavioral competencies form the foundation of pedagogy. When learner agency is present, the practices and knowledge students develop and apply beyond the classroom are likely to yield favorable outcomes (Erstad & Sefton-Green, 2013; Rajala et al., 2016). Within a particular mindset, the agency encourages students to rely on themselves, trust their efforts and learning practices, and assume responsibility for their learning success. This empowerment fosters self-reliance and a sense of accountability, essential components in the journey towards language proficiency.

Factor 2: Maturity of learning

Maturity is also a crucial aspect of successful language learning. While young learners are often seen as excellent language learners due to their adeptness in imitation, initiating language learning at an early age significantly benefits pronunciation and fluency (Scott & Ytreberg, 1990). However, maturity plays a pivotal role in comprehending language structures and capabilities. Middle-aged and older learners, in general, tend to understand these concepts more effectively, although exceptions do exist. Mature learners not only comprehend language theory better but also exhibit a greater degree of effort and control over their learning agency. As learners mature, their awareness of the learning process deepens. This implies that their pursuit of English isn't solely for amusement but for a specific purpose.

While prior research has highlighted how adult learners might display reliance on teachers in language learning behaviors (Golovatch & Vanderplank, 2007; Wong & Nunan, 2011), this study uncovers a tendency among learners to lack experience and persistence in applying individualized learning practices in digital informal learning. Despite the advantages associated with maturity in language learning, the study indicates a gap wherein learners may struggle to harness their learning autonomy effectively within digital informal learning environments.

LIMITATIONS OF THE STUDY

The research findings revealed varied correlations between SD-IDLE components and English proficiency, with some showing positive associations and others indicating negative correlations. While certain results align with previous research, some diverge from established findings. It is important to note that the results cannot be generally applied to different populations across diverse settings, times, and conditions. Nevertheless, this study strives to enhance understanding regarding informal learning beyond conventional classroom settings. Several limitations within the current study prompt recommendations for future research endeavors. The study faced challenges in participant recruitment, particularly in achieving equal representation from the three chosen universities, exacerbated by time constraints.

Future research should aim for larger, more diverse samples encompassing various participant characteristics like age, gender, and majors to enable a more comprehensive analysis of the correlation between SD-IDLE activities and English proficiency, considering potential additional influencing factors.

These limitations highlight the importance of SD-IDLE in augmenting English proficiency. Both EFL teachers and students should recognize their potential and support SD-IDLE activities to effect change. Importantly, as agents of change, we must persist in overcoming obstacles. This research aims to stimulate dialogue among English researchers and practitioners, prompting a reconsideration of their roles and pedagogical approaches.

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REFERENCES

Al-Rahmi, W. M., Othman, M. S., & Yusuf, L. M. (2015). The role of social media for collaborative learning to improve academic performance of students and researchers in Malaysian higher education. *International Review of Research in Open and Distance Learning, 16*(4), 177–204. https://doi.org/10.19173/irrodl.v16i4.2326

Arvanitis, P. (2020). Self-paced language learning using online platforms. In M. Dressman & R. W. Sadler (Eds.), *The handbook of informal language learning* (pp. 117–138). John Wiley & Sons Ltd.

Benson, P. (2011a). Language learning and teaching beyond the language classroom: An introduction to the field. In P. Benson & H. Reinders (Eds.), *Beyond the language classroom* (pp. 7–16). Palgrave Macmillan.

Benson, P. (2011b). What's new in autonomy? *The Language Teacher, 35*(4), 15–18. https://jalt-publications.org/files/pdf-article/plen3.pdf

Butler, Y. G., Someya, Y., & Fukuhara, E. (2014). Online games for young learners' foreign language learning. *ELT Journal, 68*(3), 265–275. https://doi.org/10.1093/elt/ccu008

Casanave, C. P. (2012). Diary of a dabbler: Ecological influences on an EFL teacher's efforts to study Japanese informally. *TESOL Quarterly, 46*(4), 642–670. https://doi.org/10.1002/tesq.47

Chan, N. N., Gleaves, A., & Walker, C. (2015). An exploration of students' lived experience of learning with smartphones using hermeneutic phenomenology. *Computer Assisted Language Learning, 82*, 96–106.

Chen, X.-B. (2013). Action research tablets for informal language learning: Student usage and attitudes. *Language Learning & Technology, 17*(1), 20–36. https://doi.org/10.1007/978-1-4614-6573-7

Chik, A. (2014). Digital gaming and language learning: Autonomy and community. *Language Learning and Technology, 18*(2), 85–100. http://llt.msu.edu/issues/june2014/chik.pdf

Clément, R., Baker, S. C., & MacIntyre, P. D. (2003). Willingness to communicate in a second language: The effects of context, norms, and vitality. *Journal of Language and Social Psychology, 22*(2), 190–209. https://doi.org/10.1177/0261927X03022002003

Cole, J., & Vanderplank, R. (2016). Comparing autonomous and class-based learners in Brazil: Evidence for the present-day advantages of informal, out-of-class learning. *System, 61*, 31–42. https://doi.org/10.1016/j.system.2016.07.007

Combe, C., & Codreanu, T. (2016). Vlogging: A new channel for language learning and intercultural exchanges. *CALL Communities and Culture – Short Papers from EUROCALL, December*, 119–124. https://doi.org/10.14705/rpnet.2016.eurocall2016.548

Deng, R., Benckendorff, P., & Gannaway, D. (2020). Learner engagement in MOOCs: Scale development and validation. *British Journal of Educational Technology, 51*(1), 245–262. https://doi.org/10.1111/bjet.12810

Dressman, M. (2020). Informal English learning among Moroccan youth. In M. Dressman & R. W. Sadler (Eds.), *The handbook of informal language learning* (pp. 303–318). John Wiley & Sons Ltd.

Erstad, O., & Sefton-Green, J. (2013). *Identity, community, and learning lives in the digital age*. Cambridge University Press.

Falloon, G., & Khoo, E. (2014). Exploring young students' talk in iPad-supported collaborative learning environments. *Computers and Education, 77*, 13–28. https://doi.org/10.1016/j.compedu.2014.04.008

Garrison, D. R. (1997). Self-directed learning: Toward a comprehensive model. *Adult Education Quarterly, 48*(1), 18–33. https://doi.org/10.1177/074171369704800103

Golovatch, Y., & Vanderplank, R. (2007). Unwitting agents: The role of adult learners' attributions of success in shaping language-learning behaviour. *Journal of Adult and Continuing Education, 13*(2), 127–155. https://doi.org/10.7227/jace.13.2.3

Han, I., & Shin, W. S. (2016). The use of a mobile learning management system and academic achievement of online students. *Computers and Education, 102*, 79–89. https://doi.org/10.1016/j.compedu.2016.07.003

Haßler, B., Major, L., & Hennessy, S. (2016). Tablet use in schools: A critical review of the evidence for learning outcomes. *Journal of Computer Assisted Learning, 32*(2), 139–156. https://doi.org/10.1111/jcal.12123

Hrastinski, S., & Aghaee, N. M. (2012). How are campus students using social media to support their studies? An explorative interview study. *Education and Information Technologies, 17*(4), 451–464. https://doi.org/10.1007/s10639-011-9169-5

Iacovides, I., Aczel, J., Scanlon, E., Taylor, J., & Woods, W. (2011). Motivation, engagement and learning through digital games. *International Journal of Virtual and Personal Learning Environments, 2*(2), 1–16. https://doi.org/10.4018/jvple.2011040101

Jensen, S. H. (2017). Gaming as an English language learning resource among young children in Denmark. *CALICO Journal, 34*(1), 1–19. https://doi.org/10.1558/cj.29519

Khaddage, F., Müller, W., & Flintoff, K. (2016). Advancing mobile learning in formal and informal settings via mobile app technology: Where to from here, and how? *Educational Technology and Society, 19*(3), 16–26.

Kim, H. J., Park, J. H., Yoo, S., & Kim, H. (2016). Fostering creativity in tablet-based interactive classrooms. *Educational Technology and Society, 19*(3), 207–220.

Knight, S. W. P., Marean, L., & Sykes, J. M. (2020). Gaming and informal language learning. In M. Dressman & R. W. Sadler (Eds.), *The handbook of informal language learning* (pp. 101–115). John Wiley & Sons Ltd.

Kozar, O., & Sweller, N. (2014). An exploratory study of demographics, goals and expectations of private online language learners in Russia. *System, 45*(1), 39–51. https://doi.org/10.1016/j.system.2014.04.005

Kukulska-Hulme, A., Gaved, M., Jones, A., Norris, L., & Peasgood, A. (2017). *Mobile language learning experiences for migrants beyond the classroom*. Council of Europe.

Kukulska-Hulme, A., Lee, H., & Norris, L. (2017). Mobile learning revolution: Implications for language pedagogy. In C. A. Chapelle & S. Sauro (Eds.), *The handbook of technology and second language teaching and learning* (pp. 217–233). John Wiley & Sons, Inc.

Kusyk, M. (2017). The development of complexity, accuracy and fluency in L2 written production through informal participation in online activities. *CALICO Journal, 34*(1), 75–96. https://doi.org/10.1558/cj.29513

Kusyk, M., & Sockett, G. (2012). From informal resource usage to incidental language acquisition: Language uptake from online television viewing in English. *ASp, 62*, 45–65. https://doi.org/10.4000/asp.3104

Lai, C., & Gu, M. (2011). Self-regulated out-of-class language learning with technology. *Computer Assisted Language Learning, 24*(4), 317–335. https://doi.org/10.1080/09588221.2011.568417

Lai, C., Zhu, W., & Gong, G. (2015). Understanding the quality of out-of-class English learning. *TESOL Quarterly, 49*(2), 278–308. https://doi.org/10.1002/tesq.171

Lamb, M., & Arisandy, F. E. (2019). The impact of online use of English on motivation to learn. *Computer Assisted Language Learning, 33*(1–2), 85–108. https://doi.org/10.1080/09588221.2018.1545670

Lee, J. S. (2018). *Informal digital learning of English: The case of Korean university students* [Doctoral dissertation, University of Illinois]. Graduate Dissertations and Theses at Illinois. https://hdl.handle.net/2142/101354

Lee, J. S. (2019a). Informal digital learning of English and second language vocabulary outcomes: Can quantity conquer quality? *British Journal of Educational Technology, 50*(2), 767–778. https://doi.org/10.1111/bjet.12599

Lee, J. S. (2019b). Informal digital learning of English and strategic competence for cross-cultural communication: Perception of varieties of English as a mediator. *ReCALL, 32*(1), 47–62. https://doi.org/10.1017/S0958344019000181

Lee, J. S. (2019c). Quantity and diversity of informal digital learning of English. *Language Learning and Technology, 23*(1), 114–126. https://doi.org/10.125/44675

Lee, J. S., & Drajati, N. A. (2019a). Affective variables and informal digital learning of English: Keys to willingness to communicate in a second language. *Australasian Journal of Educational Technology, 35*(5), 168–182. https://doi.org/10.14742/ajet.5177

Lee, J. S., & Drajati, N. A. (2019b). English as an international language beyond the ELT classroom. *ELT Journal, 73*(4), 419–427. https://doi.org/10.1093/elt/ccz018

Lee, J. S., & Dressman, M. (2018). When IDLE hands make an English workshop: Informal digital learning of English and language proficiency. *TESOL Quarterly, 52*(2), 435–445. https://doi.org/10.1002/tesq.422

Lee, J. S., & Hsieh, J. C. (2019). Affective variables and willingness to communicate of EFL learners in in-class, out-of-class, and digital contexts. *System, 82*, 63–73. https://doi.org/10.1016/j.system.2019.03.002

Lee, J. S., & Lee, K. (2019a). Informal digital learning of English and English as an international language: The path less traveled. *British Journal of Educational Technology, 50*(3), 1447–1461. https://doi.org/10.1111/bjet.12652

Lee, J. S., & Lee, K. (2019b). Perceptions of English as an international language by Korean English-major and non-English-major students. *Journal of Multilingual and Multicultural Development, 40*(1), 76–89. https://doi.org/10.1080/01434632.2018.1480628

Lee, K. S., Tsai, P. S., Chai, C. S., & Koh, J. H. L. (2014). Students' perceptions of self-directed learning and collaborative learning with and without technology. *Journal of Computer Assisted Learning, 30*(5), 425–437. https://doi.org/10.1111/jcal.12055

Livingstone, D. W. (2001). *Adults' informal learning: Definitions, findings, gaps and future research* (NALL Working Paper No. 21). Centre for the Study of Education and Work. https://hdl.handle.net/1807/2735

Ludke, K. M. (2009). *Teaching foreign languages through songs*. IMHSD, University of Edinburgh.

Lyrigkou, C. (2019). Not to be overlooked: Agency in informal language contact. *Innovation in Language Learning and Teaching, 13*(3), 237–252. https://doi.org/10.1080/17501229.2018.1433182

Maddox, W. T., Chandrasekaran, B., Smayda, K., & Yi, H.-G. (2013). Dual systems of speech category learning across the lifespan. *Psychology and Aging, 28*(4), 1042–1056. https://doi.org/10.1037/a0034969

Major, L., Haßler, B., & Hennessy, S. (2017). Tablet use in schools: Impact, affordances and considerations. In A. Marcus-Quinn & T. Hourigan (Eds.), *Handbook for digital learning in K-12 schools* (pp. 115–128). Springer.

Merriam, S. B. (2017). Adult learning theory: Evolution and future directions. *PAACE Journal of Lifelong Learning, 26*, 21–37. https://www.iup.edu/WorkArea/DownloadAsset.aspx?id=250023

Mitra, S., Tooley, J., Inamdar, P., & Dixon, P. (2003). Improving English pronunciation: An automated instructional approach. *Information Technologies and International Development, 1(*1), 75–84. https://doi.org/10.1162/154475203771799720

Oxford, R., & Shearin, J. (1994). Language learning motivation: Expanding the theoretical framework. *The Modern Language Journal, 78*(i), 12–28. https://doi.org/10.1111/j.1540-4781.1994.tb02011.x

Peters, A. (2009). The merits of global constitutionalism. *Indiana Journal of Global Legal Studies, 16*(2), 396–411. http://www.repository.law.indiana.edu/ijgls/vol16/iss2/2

Rajala, A., Kumpulainen, K., Hilppö, J., Paananen, M., & Lipponen, L. (2016). Connecting learning across school and out-of-school contexts: A review of pedagogical approaches. *Learning Across Contexts in the Knowledge Society* (pp. 15-35). Sense Publishers. https://doi.org/10.1007/978-94-6300-414-5_2

Reinders, H., & Wattana, S. (2014). Can I say something? The effects of digital game play on willingness to communicate. *Language Learning and Technology, 18*(2), 101–123. http://llt.msu.edu/issues/june2014/reinderswattana.pdf

Reinders, H., & Wattana, S. (2015). Affect and willingness to communicate in digital game-based learning. *ReCALL, 27*(1), 38–57. https://doi.org/10.1017/S0958344014000226

Sadler, R. W. (2020). Virtual landscapes. In M. Dressman & R. W. Sadler (Eds.), *The handbook of informal language learning* (pp. 87–100). John Wiley & Sons Ltd.

Sauro, S., & Sundmark, B. (2019). Critically examining the use of blog-based fanfiction in the advanced language classroom. *ReCALL, 31*(1), 40–55. https://doi.org/10.1017/S0958344018000071

Schugurensky, D. (2000). *The forms of informal learning: Towards a conceptualization of the field* (NALL Working Paper No. 19). Centre for the Study of Education and Work. https://hdl.handle.net/1807/2733

Scott, W. A., & Ytreberg, L. H. (1990). *Teaching English to children*. Longman.

Sockett, G. (2013). Understanding the online informal learning of English as a complex dynamic system: An emic approach. *ReCALL, 25*(1), 48–62. https://doi.org/10.1017/S095834401200033X

Sockett, G. (2014). *The online informal learning of English*. Palgrave Macmillan.

Sockett, G., & Toffoli, D. (2012). Beyond learner autonomy: A dynamic systems view of the informal learning of English in virtual online communities. *ReCALL, 24*(2), 138–151. https://doi.org/10.1017/S0958344012000031

Su, C. -H., & Cheng, C. -H. (2015). A mobile gamification learning system for improving the learning motivation and achievements. *Journal of Computer Assisted Learning, 31*(3), 268–286. https://doi.org/10.1111/jcal.12088

Sun, Y., Franklin, T., & Gao, F. (2017). Learning outside of classroom: Exploring the active part of an informal online English learning community in China. *British Journal of Educational Technology, 48*(1), 57–70. https://doi.org/10.1111/bjet.12340

Sundqvist, P. (2009a). *Extramural English matters: Out-of-school English and its impact on Swedish ninth grader & APOs* [Doctoral dissertation, Karlstad University]. Karlstad University Studies. http://www.diva-portal.org/smash/get/diva2:275141/FULLTEXT03

Sundqvist, P. (2009b). The impact of spare time activities on students' English language skills. *Vägar till Språk Och Litteratur, January 2009*, 63–76. http://kau.diva-portal.org/smash/record.jsf?pid=diva2:292232

Sundqvist, P. (2019). Commercial-off-the-shelf games in the digital wild and L2 learner vocabulary. *Language Learning & Technology, 23*(1), 87–113. https://doi.org/doi.org/10125/44674

Sundqvist, P., & Sylvén, L. K. (2014). Language-related computer use: Focus on young L2 English learners in Sweden. *ReCALL, 26*(1), 3–20. https://doi.org/10.1017/S0958344013000232

Sundqvist, P., & Sylvén, L. K. (2016). *Extramural English in teaching and learning: From theory and research to practice*. Palgrave Macmillan.

Sundqvist, P., & Wikström, P. (2015). Out-of-school digital gameplay and in-school L2 English vocabulary outcomes. *System, 51*, 65–76. https://doi.org/10.1016/j.system.2015.04.001

Sung, Y.-T., Chang, K.-E., & Liu, T.-C. (2016). The effects of integrating mobile devices with teaching and learning on students' learning performance: A meta-analysis and research synthesis. *Computers and Education, 94*, 252–275. https://doi.org/10.1016/j.compedu.2015.11.008

Sung, Y.-T., Chang, K.-E., & Yang, J.-M. (2015). How effective are mobile devices for language learning? A meta-analysis. *Educational Research Review, 16*, 68–84. https://doi.org/10.1016/j.edurev.2015.09.001

Sylven, L. K., & Sundqvist, P. (2012). Gaming as extramural English L2 learning and L2 proficiency among young learners. *ReCALL, 24*(3), 302–321. https://doi.org/10.1017/S095834401200016X

Tan, K. E., Ng, M. L. Y., & Saw, K. G. (2010). Online activities and writing practices of urban Malaysian adolescents. *System, 38*(4), 548–559. https://doi.org/10.1016/j.system.2010.09.014

Tannenbaum, R. J., & Baron, P. A. (2011). *Mapping TOEFL® ITP scores onto the common European framework of reference*. Education Testing Service.

Teo, T., & Koh, J. H. L. (2010). Assessing the dimensionality of computer self-efficacy among pre-service teachers in Singapore: A structural equation modeling approach. *International Journal of Education and Development Using Information and Communication Technology, 6*(3), 7–18.

Toffoli, D. (2020). *Informal learning and institution-wide language provision: University language learners in the 21st century*. Palgrave Macmillan. https://doi.org/10.1007/978-3-030-37876-9

Toffoli, D., & Sockett, G. (2015). University teachers ' perceptions of online informal learning of English (OILE). *Computer Assisted Language Learning, 28*(1), 7–21. https://doi.org/10.1080/09588221.2013.776970

Trinder, R. (2017). Informal and deliberate learning with new technologies. *ELT Journal, 71*(4), 401–412. https://doi.org/10.1093/elt/ccw117

Vanderplank, R. (2016). *Captioned media in foreign language learning and teaching: Subtitles for the deaf and hard-of-hearing as tools for language learning*. Palgrave Macmillan.

Wong, L. L. C., & Nunan, D. (2011). The learning styles and strategies of effective language learners. *System, 39*(2), 144–163. https://doi.org/10.1016/j.system.2011.05.004

Woo, J. C. (2014). Digital game-based learning supports student motivation, cognitive success, and performance outcomes. *Educational Technology and Society, 17*(3), 291–307.

Appendix 1

Questionnaire for EFL students' SD-IDLE activities (Modified from Lai et al., 2015)

Part 1 Demography information

1	Name of student	:	_____
2	Sex	:	_____
3	Age	:	_____ years old
4	Address	:	_____
5	Name of university	:	_____
6	Major of study	:	_____
7	Level of education	:	_____ semester
8	English proficiency score	:	_____
9	Experience in using digital English language learning	:	_____ years
10	Type of digital English language learning application	:	_____

Part 2 Nature of SD-IDLE activities

Instructions:

This questionnaire is designed to gather data on English language learners' self-directed digital learning of English. After reading each item, please indicate the degree to which you feel that statement is true. There are no right or wrong answers. Please read each choice carefully and choose the response that best expresses your feelings.

There is no time limit for the questionnaire. Try not to spend too much time on any one item; however, your first reaction to the question will usually be the most accurate.

Responses:

1 = Strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree, 5 = Strongly Agree

No	Statement	1	2	3	4	5
	SELF-MANAGEMENT					
	a. Goal Commitment					
1.	I use technology to help me persevere in reaching my ultimate goal in learning English.					
2.	I use technology to help me achieve my English learning goals more quickly and efficiently.					
3.	I encourage myself to use technology to read English news to communicate with English speakers.					

No	Statement	1	2	3	4	5
	SELF-MANAGEMENT					
	b. Resource needs					
4.	I actively seek interest in online English learning materials and experience.					
5.	When I feel I need more learning resources in English, I use technology to expand my learning resources.					
6.	I use technology to expand my English learning experience beyond the language classroom.					
7.	I use technology to create and increase opportunities to learn and use English.					
8.	I use technology to make it possible to study English at any time and any place.					
9.	I use technology to seek help in English from different venues.					
	SELF-MONITORING					
	a. Metacognition					
10.	I check my current English learning level by chatting or reading online materials.					
11.	I use technology to set up English learning task at different stages.					
12.	For the English areas that I'm weak in, I know how to select and use appropriate ICTs to improve the areas.					
13.	I know how to use ICTs to effectively monitor myself to achieve the English learning goals at each stage.					
	b. Social connection needs					
14.	I use technology to communicate with English speakers.					
15.	I use technology to communicate with English learners from other countries.					
16.	I use technology to seek encouragement and support from English learners from other countries.					
	SELF-MOTIVATION					
	a. Attitudinal needs					
17.	I actively use technology to avoid negative feelings towards English learning.					
18.	I boost my confidence in English learning by chatting online or reading English materials online.					
19.	Technology effectively maintains my interest and enthusiasm in learning English.					
20.	Technology makes me enjoy English learning more.					

Appendix 2

Semi-structured interview guide for EFL students' SD-IDLE activities

Part 1 Demography information

1	Name of student	:	_____
2	Sex	:	_____
3	Age	:	_____ years old
4	Address	:	_____
5	Name of university	:	_____
6	Major of study	:	_____
7	Level of education	:	_____ semester
8	English proficiency score	:	_____

Part 2 EFL students' nature of SD-IDLE activities

1. Do you think English learning using technology as your initiative is very important for your success in class and future career? Why?
2. How do you set your own English learning goals for what you will learn from digital learning applications?
3. How do you organize your English learning hours by making plans to use digital learning applications?
4. Do you believe in the importance of playing an active role in English learning using technology? Why?
5. Do you use automatic error detection (grammar and spelling check) to correct language mistakes? Why?
6. How do you practice English learning using websites?
7. Do you watch videos (from YouTube, etc.) to help you explain concepts/knowledge in English related to your study? Why?
8. Do you look up new concepts/terms in electronic dictionaries and encyclopedias? Why?
9. Do you record yourself (audio or video) to find out what you need to improve in your English speaking / presentation skills? Why?
10. Do you listen to English songs? Why?
11. Do you read and post social media comments in English? Why?
12. Do you watch English short clips with text or without text? Why?
13. Do you read the English daily news on the internet? Why?
14. Do you access online dictionaries? Why?
15. How do you access websites with English learning exercises?
16. Do you listen to podcasts in English? Why?
17. Do you play online games that require English-written communication with other players? Why?
18. Do you play online games that require English-spoken communication with other players? Why?

19. Do you think the use of digital devices helps check pronunciation? Why?
20. Do you think the use of digital devices helps master English words? Why?
21. Do you use the internet to help you with your assignment? Please explain.
22. How do you know which digital learning resource you should use when you want to learn a new English subject?
23. How do you take notes about important points when learning a new English subject from a digital learning application?
24. Do you use different digital learning platforms for different English lessons? Why?
25. How do you highlight the important parts while reading English digital text?
26. Do you think about what you should do to be more successful after each English learning process through a digital learning application? Why?
27. How do you assess whether you have achieved the objective and outcomes you set up at the beginning of each English digital learning process?
28. How do you assess which of the digital learning resources you use is more effective and efficient after each English learning process?
29. How do you manage your English learning resources outside the classroom? Teacher (other) instructed or self-instructed?
30. How do you use technology to connect with other English learners for learning (sharing experiences, questions and answers, and documents related to learning)?
31. How do you enjoy learning English? Please explain.
32. Do you feel confident or nervous about communicating in English? Why?
33. Do you like English learning as your hobby of using digital learning applications during your leisure time? Please explain.
34. Are you motivated to learn English on your own by using digital learning applications without having to rely on other people? Why?