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by Kurniasih Et.al

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The ICT Use of Informal Digital Learning in Enhancing EFL University Students' English Performance

Merliyani Putri Anggraini (merlianiputri@gmail.com)
Universitas Negeri Malang, Indonesia

Mirjam Anugerahwati (mirjam.anugerahwati.fs@um.ac.id)
Universitas Negeri Malang, Indonesia

Ratih Novita Sari (ratihnovitasari@uhamka.ac.id) *Corresponding Author
Universitas Negeri Malang, Indonesia
Universitas Muhammadiyah Prof. Dr. HAMKA, Indonesia

Delsa Miranty (delsa12@untirta.ac.id)
Universitas Sultan Ageng Tirtayasa, Indonesia

Kurniasih (kurniasih@unisma.ac.id)
Universitas Islam Malang, Indonesia

Iswahyuni (iswahyuni@ub.ac.id)
Universitas Negeri Malang, Indonesia
Universitas Brawijaya, Indonesia

Abstract

Due to its proximity to English online platforms, an informal environment provides a wide variety of information, communication, and technology (ICT) resources for language learning. This study elaborates on how EFL students perceive the ICT use in informal digital learning of English (IDLE) and how they engage in IDLE activities across individual differences. A total of 993 full-time undergraduate and postgraduate students in Indonesia participated in this study. An online survey and focus group discussion were employed to explore the most frequent IDLE activities, preferred devices, and barriers to performance of those activities. The results depicted that all participants had positive responses to using ICT in their IDLE activities. Playing online games, watching YouTube videos, and engaging in social media information were the behaviors that were undertaken most frequently across all personality differences. Regarding device preferences, most participants tend to use their smartphones rather than other devices (i.e., laptops and tablets). The common barrier faced by the participant was the internet connection. However, the prices of the applications and the ICT competence were the minor barriers experienced by the participants. English language educators may consider the results of this study. Thus, they can discover the solutions to overcome the barriers hindering the students from adopting ICT for their informal learning.

Keywords: informal digital learning of English, ICT platforms, individual differences, barriers in IDLE activities, formal learning

Introduction

With the increase of ICT tools used in informal digital learning of English (IDLE), numerous studies explore how Computer-assisted language learning (CALL) and Mobile-assisted language learning (MALL) contribute to IDLE (Elaish et al., 2017; Hubbard, 2019; Lee & Dressman, 2018; Soyoof et al., 2021). Besides, Şad et al. (2020) also compare CALL and MALL to know which technology improves English acquisition in informal learning. Findings from recent studies reported a positive correlation among them (De Wilde et al., 2022; Hubbard, 2019; Lee, 2020). In addition, more research on ubiquitous learning has begun to examine other aspects of IDLE, such as the function of informal learning and its organization (Masrai & Milton, 2018; Rogoff et al., 2016). Other researchers, Cerasoliet al. (2018), have synthesized informal learning and the outcome behavior's core concept. Holland (2019) develops and supports them by focusing on designing theory on the practical principles of IDLE design. Furthermore, Lee (2019) reveals that IDLE activities' quantity and diversity influence students' learning performances. It can be assumed that individual differences and the number of actions might define students' learning achievement.

A growing body of research demonstrates that higher education students' characteristics significantly affect the use of mobile media in informal learning (Dolcy & Livingstone, 2019; Şendurur et al., 2020). Yang et al. (2016) argued that there might be some heterogeneity across students in learning English with technology; thus, their specific characteristics can independently be considered. However, limited research emphasizes the adolescents' diversities in informal digital learning of English, such as age and gender differences (He & Zhu, 2017; Lee & Drajati, 2019). Related to gender effects, Şad et al. (2020) reported that female students use their smartphones more frequently than their male peers to engage in language learning activities. Likewise, the frequency of internet use and social backgrounds also show the effect on students' English learning achievement (Azzolini et al., 2022). Lamb and Arisandi (2020) also add that the students prefer watching their favorite entertainment and doing their self-instruction than joining the social activity.

Based on the findings reported from previous studies, predicting students' learning performances cannot solely rely on a single individual difference (e.g., gender or social background; Gars & Ward, 2019; Lien, 2016; Noe et al., 2013). Nevertheless, all student attributes are used to describe language-learning preferences. Limited research of studies presents students' characteristics in determining their perception of IDLE activities (He & Zhu, 2017; Lee & Drajati, 2019). Moreover, as suggested by Yang and Quadir (2018), To deliver successful customization, it is necessary to study the ramifications of individual differences. Therefore, to fill this gap, this present study examines how EFL students perceive the use of ICT in language learning and how they engage in IDLE activities across individual differences (i.e., age, gender, education qualification, study program, and region).

Additionally explored are the students' device preferences and the obstacles they face when doing IDLE activities. In light of the previous discussion, we formulated the research questions as follows:

1. What kinds of IDLE activities are preferred by EFL learners to support their formal English learning?
2. How do EFL learners engage in IDLE activities across individual differences, namely age, gender, education qualification, study program, and region?

Review of Related Literature

ICT for Language Learning

Technology facilitates language learners in learning English. It can be observed through numerous studies using technology as a learning medium, such as online learning applications (Rehm et al., 2018), mobile learning applications (de la Fuente, 2014;), game applications (Blume, 2020), and other social media platforms (Anggraini & Cahyono, 2020; Lambton-Howard et al., 2021; Minasyan et al.,2018). Using ICT in language learning is advantageous for students. It can improve vocabulary mastery and reading speed (Masrai & Milton, 2018), the capacity to employ English articles appropriately (Kao, 2020), and speaking and listening skills (Masrai & Milton, 2018; Nguyen & Stracke, 2021). Still, some ICT mobile applications have limited reading and writing skills (Sad et al., 2020). English's widespread presence in the virtual world means unprecedented access to English resources whenever and wherever smartphones are used (Elaish et al., 2017). In summary, students believe smartphones can facilitate them to practice their English language skills inside or outside the classroom.

Due to the development of technology, language learning can occur in any situation, i.e., in formal and informal education (Cárdenas-Claros & Oyanedel, 2016; Carraro & Trinder, 2021; Zhao, 2020), which allows students to get exposed to the target language through personal computers or smartphones. Elaish et al. (2017) found that media and gaming technologies in computers and smartphones promote learner engagement and enjoyment. Smartphones allow users to take pictures, listen to music, write notes, watch audio-visual material, record voices or short videos, use dictionaries or language study software, play games, radio, send text messages, and social networking (Jurkovic, 2019). SMS, MMS, and other online smartphone messaging technology can improve learners' performance. Thus, using mobile devices as personal learning tools, mobile learning (m-learning) has the potential to revolutionize language learning and instruction to synergize in-class and out-of-class learning spaces (Elaish et al., 2017). In other words, students can develop their language and performance skills as long as they accept and utilize mobile learning.

Informal Digital Learning of English (IDLE)

IDLE is a self-directed exercise for learning English, according to Lee and Dressman (2018). The activities outside of the classroom are neither regulated nor directed by a formal teacher (Lee, 2019). Therefore it is more autonomous learning since students control the process of learning and goal setting, mainly without a defined time or place. (He & Zhu, 2017). Moreover, Reinders and Benson (2017) identified four main dimensions of IDLE: location (in-class vs out-of-class), formality (formal vs non-formal), pedagogy (instructed vs not instructed), and locus of control (self-directed vs other-directed). IDLE uses the four dimensions as its fundamental structure. However, since the framework is still rudimentarily, it needs some development. Reinders and Benson (2017) invite other researchers to fill the drawbacks of the early IDLE principles, such as setting configurations and the availability of resources.

Furthermore, Lee (2019) classified the dimensions explicitly into two domains: IDLE in extracurricular and IDLE in extramural context. IDLE in extracurricular means when the students expose IDLE to the teacher's instruction, while IDLE in extramural context means the students use IDLE voluntarily without teacher intervention (Lee, 2019). This current study adopts IDLE in the extramural concept by investigating EFL students' autonomous use

of English in informal digital settings without teachers' interference. Previous studies' results showed that there is scant research investigating the role of IDLE in extramural contexts for language learning. For students at the higher education level, Jurkovič (2019) claimed that most undergraduate students in Slovenia actively used smartphones for extramural English practice, such as writing messages, discussing materials with schoolfellows, and composing emails.

Other English Language Teaching (ELT) scholars have also begun integrating a range of technology on IDLE for language learning; for example, watching youtube videos (Burhanlı & Bangir-Alpan, 2021; Wang & Chen, 2020), playing online games (Feng & Yamada, 2021; Sadovets et al., 2022), being active on social media (Al-Sabaawi et al., 2021; Ibrahim, 2018). Most of them reported positive impacts on the improvement of language competence, for instance, improvement in speaking (Lee & Dressman, 2018), reading (Cole & Vanderplank, 2016), and vocabulary mastery (Jensen, 2017; Lee, 2019, Leona et al., 2021; Masrai & Milton, 2018; Sundqvist, 2019). Besides, IDLE positively influences students' cognitive performance when taking the English standardized test (TOEIC; Lee, 2019). Furthermore, the studies showed that IDLE activities also give effective benefits. For instance, they enhance students' motivation (Lamb & Arisandy, 2020), self-confidence (Lai et al., 2015), and willingness to communicate in a second language (L2; Lee & Djati, 2019; Lee & Dressman, 2018). A recent study also found that EFL students' who are frequently engaged in IDLE can use cross-cultural communication strategies (Lee, 2020). Thus, the aforementioned prior analyses have been carried out to examine the impact of IDLE on language, cognitive, and affective factors; however, the correlation between IDLE and digital literacy across individual differences is still under research. Yang and Quadir (2018) have suggested that individual diversity should be seriously considered in any technology study.

Individual Differences

Previous findings demonstrate that higher education students' characteristics significantly affect the use of mobile media in IDLE activities (Dolcy & Livingstone, 2019; Şendurur et al., 2020). In other words, digital abilities and individual differences might, directly and indirectly, affect informal learning using technology (Jurkovič, 2019; Lamb & Arisandy, 2020). Participants' age, gender, academic fields, and socioeconomic status are contrasted in these studies. However, scant studies highlight the diversity of adolescents' informal digital English learning (De Wilde et al., 2022; He & Zhu, 2017; Lee, 2019). In addition, the results of earlier studies are inconsistent and unpersuasive.

In recent research, previous studies portray inconclusive findings on the relationship between ICT adoption in IDLE activities and individual differences (Dolcy & Livingstone, 2019; Sabah, 2016). Rodriguez-Gomez et al. (2019) and Azzolini et al. (2022) uncovered that gender and socioeconomic status have a robust association with students' English competence. Moreover, girls from high socioeconomic status predominantly showed a higher degree of the relationship than their counterparts. On the contrary, another study reveals that gender did not correlate strongly (Toffoli & Sockett, 2015). The result of the research is consistent with a recent study by Lee (2019). In this study, other individual differences (i.e., age, gender, and study field) were elaborated on to see the association. Based on those variables, only gender did not appear to be a substantial variable that strongly correlates with students' TOEIC scores after exposure to IDLE activities. Meanwhile, other variables, such as age and field of study, disclosed positive correlations.

Additional research has scrutinized the relationship between IDLE activities and learners' affective variables, e.g., anxiety, attitude, behavior, motivation, and personality

types (Anggraini et al., 2022; Cole & Vanderplank, 2016; Kurniasih et al., 2022; Noe et al., 2013; Trinder, 2017). Conversely, those factors are beyond the scope of the current research and would not be deliberated further. In this study, the authors only focus on exploring EFL learners' views about using ICT for their informal language learning and their engagement in IDLE activities across individual differences. Individual differences are believed to influence an individual's employment of preference-based systems (Robey, 2019; Yang & Chen, 2020). Therefore, this current research proposes those categories for elucidating insufficient empirical research from the studies mentioned above that have not explored those variables in their studies.

Methods

Research Design and Participants

This study adopted a mixed-method research design, namely an explanatory sequential design. This design was introduced by Creswell (2012), letting the present study's authors comprise the quantitative and qualitative data. The quantitative data (i.e., online survey data) were taken ahead of the qualitative data. A total of 1023 full-time undergraduate and postgraduate university students in Indonesia volunteered to take an online survey. However, only 993 valid responses were retained, among whom 739 were female, and 254 were male with different ages, education levels, fields of study, and cities/regions. The ages ranged from 18 to 40 years (the youngest participant was 18; the oldest participant was 40). In terms of the discipline of study, 118 participants (11.88%) were students of science studies (e.g., biology, nursing, engineering) and 875 social science studies (e.g., communication, languages, law; 88.12%). All participants were taken from three types of cities/regions across Indonesia, i.e., 328 participants from urban (33,03%), 345 participants from suburban (34.74%), and 320 participants from rural areas (32.23%). Those participants were from different universities in Indonesia with varying levels of education, although there was no university categorization involved in this study.

In the survey, 354 participants expressed willingness to participate in further investigation of the study data. They were invited to participate in a focus group discussion (FGD). The final inventory of participants, who attended the activity, consisted of a self-selected sample of 19 students who responded to the email invitation and agreed on a date and time for the FGD. Eight were male, and eleven were female. Their ages ranged between 18 and 42 years old. Eleven came from the field of social sciences and eight from science. Besides, they were from Indonesian cities/regions. The authors further distinguished the participants who voluntarily joined the online interviews using these fictional names (pseudonyms). The following table is a description of them:

Table 1
List of FGD Participants' Data

No	Pseudonym	Age	Gender	Education Qualification	Fields of Study	City/ Region
1	Raditya	20 years old	Male	Undergraduate	Social Science	Rural
2	Indra	36 years old	Male	Doctorate	Science	Suburban
3	Zara	19 years old	Female	Undergraduate	Science	Rural
4	Rahmi	21 years old	Female	Undergraduate	Social Science	Urban
5	Sukma	19 years old	Female	Undergraduate	Science	Rural
6	Gunawan	21 years old	Male	Undergraduate	Social Science	Suburban
7	Satria	25 years old	Male	Master	Social Science	Suburban
8	Maya	27 years old	Female	Master	Social Science	Suburban
9	Sekar	19 years old	Female	Undergraduate	Science	Urban
10	Ayu	27 years old	Female	Master	Science	Urban
11	Puspa	42 years old	Female	Doctorate	Social Science	Rural
12	Endah	19 years old	Female	Undergraduate	Social Science	Rural
13	Rudi	20 years old	Male	Undergraduate	Social Science	Suburban
14	Rian	25 years old	Male	Master	Social Science	Rural
15	Rangga	30 years old	Male	Master	Science	Rural
16	Dina	22 years old	Female	Undergraduate	Social Science	Suburban
17	Eriana	18 years old	Female	Undergraduate	Science	Rural
18	Dewi	19 years old	Female	Undergraduate	Science	Urban
19	Manto	19 years old	Male	Undergraduate	Social Science	Suburban

Instruments and Data Collections

Before participating in the research, the authors asked for participants' consent to join the survey. The data were collected from an online survey and a focus group discussion (FGD). An online survey adapted from a previous study (Jurkovič, 2019) was distributed to

collect the data using Google Form. It included three sections: (1) demographic information, such as age, gender, and education level, (2) 34 five-Likert-scale statements of IDLE activities, and (3) preferences in using ICT (preferred devices) and barriers to ICT use. This survey took approximately 10–15 minutes to finish.

Another instrument the authors developed in collecting the data is a list of questions for FGD (see Appendix). An expert on English Language Teaching was asked to validate the FGD questions. He checked the questions based on the purpose of the study and the language use. The consent form was sent via email to the participants. The authors got the emails from an online survey. After getting the participants' consent, an FGD was employed. Participants wishing to participate in the FGD were invited to a video call conference meeting. The employment of this instrument was necessitated by the Covid-19 epidemic, which impeded face-to-face meetings. Therefore, the authors decided to conduct the FGD activity online using a meeting conference application. During the meeting, which lasted approximately 55 minutes, the authors divided the participants into several rooms and questioned them on their ICT literacy and IDLE activities. This instrument was intended to address the first study question on students' perspectives on utilizing ICT for English language learning

Data Analysis

All the recorded conversations were transcribed for further analysis. As the FGD was conducted using Indonesian, the transcriptions were translated into English to have a comprehensible meaning. Those translated conversations were proofread for their validity and reliability. To examine the FGD data, the authors utilized a two-step content analysis based on the interview transcripts recommended by Elo et al. (2014). Firstly, the data were read multiple times to familiarize oneself with the pertinent parts of IDLE. Secondly, the transcripts were coded to highlight recurring concepts and themes. Data obtained from an online survey was analyzed using descriptive statistics. Descriptive statistics were employed to know preferred devices and barriers to using ICT. Further, the data were interpreted to answer the research questions about students' engagement in IDLE activities across individual differences. The authors classified these personal characteristics by age, gender, level of education, the field of study, and city/region for each participant.

Results and Discussion

Results

The current research aimed to discover the preferred IDLE activities for enhancing formal learning and how the EFL learners engage in the activities across their differences, namely age, gender, education qualification, study program, and city/region. There are two kinds (i.e., quantitative and qualitative) of data depicted in every research question. The quantitative results will be presented ahead of the qualitative findings.

Preferred IDLE Activities for Enhancing Formal Learning

The authors asked the 993 participants to rate how often they performed IDLE activities. There were 34 activities in IDLE. The activities included internet gaming, video viewing, and social media participation. The findings of the survey are presented in the table below.

Table 2

The Preferred IDLE Activities

No.	Activities	Percentage (%)
1	Listen to music	79
2	Look for study-related information on the internet.	73
3	I communicate with my classmates regarding study-related issues using messaging applications.	71
4	I write short text messages using messaging application.	71
5	I access online dictionaries.	70
6	I listen to lecturing video	70
7	I watch foreign films and television series with subtitles in English or another foreign language	68
8	I read social media comments.	67
9	Check non-study-related information on the internet.	67
10	Watch short clips with text	66
11	I use language learning apps that I have downloaded onto my smartphone.	64
12	I read emails	62
13	I read long online texts.	62
14	Read the online daily news.	61
15	I watch foreign films and television series with subtitles in my mother tongue	61
16	Watch television.	61
17	I access websites with language learning exercises.	61
18	Read e-books.	61
19	I listen to podcasts.	61
20	I communicate with my teachers regarding study-related issues using messaging applications.	59
21	Play games that require reading instructions.	59
22	I leave voice messages to other users on the messaging application.	58
23	Post social media comments.	57
24	I write down new words that I learn in a foreign language.	57
25	Write emails.	56
26	I watch foreign films and television series with no subtitles.	56
27	I participate in LinkedIn, Facebook, and other online groups discussing language learning.	55
28	I play games that require written communication with other players.	54
29	I play games that require spoken communication with other players.	53
30	I play language games such as crosswords.	52
31	I listen to audio books.	49
32	Listen to the radio.	44
33	I keep a blog.	44
34	I keep an audio blog.	41

Based on Table 2 above, it can be seen that 79% of participants preferred to listen to music as their IDLE activity to improve their English. Additionally, the least frequent IDLE activity performed by the participants was keeping an audio blog. To look more deeply into the participants' preferences for IDLE activities, an FGD was conducted to collect significant data. The 19 FGD participants believed that their English proficiency might improve if they were exposed to ICT tools in their IDLE activities for a minimum of three to four hours per day utilizing their various devices. The results of FGD findings portrayed that participants frequently outlined the IDLE activities they used the most by using the ICTs. The authors concluded that the top three most frequently mentioned IDLE activities were playing online games, watching YouTube videos, and using social media and messaging applications, based on the detailed information of preferred IDLE activities, including the media used to perform the activities. The participants also provided feedback on how to emphasize how ICT usage can assist them in completing IDLE activities. Consequently, the following part contains the

qualitative findings regarding the activity preferences and the justifications for performing them.

Online Games

The authors discovered that IDLE was designed to encourage students to engage in the formal study material. In other words, formal and informal language learning complement each other. The participants maintained that IDLE activities could provide more relevant examples to supplement formal learning. For instance, a participant explained how they use IDLE activities to understand their formal learning better.

> **Rudi:** *"...Last semester, I got a good score on the Cross Culture Understanding course. At that time, I reported some culture shocks while playing an online collaboration game. I got the data from my foreign friend from some countries. My lecturer was so happy because of that. It was so fun for learning English while playing games. It is because of technology".*

> **Raditya:** *"For the last six months, I played the online game as my IDLE activity for two hours. For me, it supports 50 – 60% of my language improvement. Moreover, sometimes, I talked with foreigners through this activity, so I got two advantages. I could play the game online and speak with foreigners to practice my English".*

What happened to Rudi and Raditya is in line with an extramural concept. Rudi takes advantage of his IDLE activities to support his formal classes since both activities are similar in culture. He tried to relate to his own goal based on his preference. As his goal was to have a better understanding of the subject in his study, Rudi configured his comprehension of what he knew based on his experience playing online games with foreigners. Moreover, playing online games for some time influences language competence. Participants in which they have the opportunity to interact with people all over the world while doing leisure activities.

YouTube Videos

Most participants have additionally exposed themselves to YouTube during their IDLE activities. Since YouTube is a video-sharing website containing billions of videos on numerous topics. It allows people to choose what they need based on their passion through YouTube.

> **Rangga:** "*... I watch English movies and reality shows on YouTube, such as "Learn English With TV Series" channel. From the videos, I learn that some expressions have the same meaning. For example, the expression of "you are welcome", it can be replaced by "no worries", "no problem," "do not mention it", or "glad to help," I think there are many other phrases which can be used to respond thank you. At the same time, while watching the videos, I listen to how to pronounce the words or phrases, I also learn the spelling by reading the caption option provided by Youtube".*

As reported by some participants, they perceived that this activity helped them understand the English language more. Based on this statement, it can be concluded that young participants prefer to use technology assistance to exploit the sophisticated features of the technology to use technological support for their informal learning activities. By watching

the YouTube videos, they can imitate the pronunciation of words or phrases and check the spelling of the terms through the caption, one of the features on YouTube.

Social Media

Besides playing online games and watching Youtube videos, another preferred IDLE activity reported by the participants was engaging in social media.

> ***Dina:*** *"I love following famous people's daily activities through social media like Instagram. I learned some utterances or expressions I had never seen and heard before in my formal class by seeing their posting. For example, a few weeks ago, I got a new idiom from one of the people on Instagram, "cup of tea." ...Teachers in my campus rarely produce idioms when they teach".*
>
> **Rahmi:** *"...Moreover, I used OmeTV too, So I could learn how to pronounce words like the native speakers by communicating with them".*

Participants categorized as young learners claimed that they actively engaged in social media platforms such as *Instagram, WhatsApp, Telegram, Facebook,* and OME. They believe that those platforms provide language input to improve their English ability. For example, Dina admitted that following people on social media could enrich her vocabulary mastery which she did not receive in the formal English classroom. Besides that, social media can meet English learners and native speakers. This feature was also found in online video games, which let them communicate with native English speakers. As reported by Rahmi, she can take advantage of learning how to improve her pronunciation by meeting people on OmeTV.

The Engagement in IDLE Activities across Individual Differences

In this research question, the authors would explore aspects that make the students engage in IDLE activities across their gender, age, education level, fields of study, and city/region. Those aspects include preferred devices and the barriers they experience when performing IDLE activities.

Preferred Device for Online Use Across Individual Differences

In this section, the device preference of participants across individual differences is being explored. Table 3 depicts the result of the data.

Table 3
Preferred device

INDIVIDUAL DIFFERENCES		LAPTOP (%)	SMARTPHONE (%)	TABLET (%)
AGE	18 - 23 YEARS OLD	18.8	80.3	0.9
	24 - 29 YEARS OLD	16.1	83.9	0
	30 - 34 YEARS OLD	27.3	72.7	0
	35 - 40 YEARS OLD	40.0	60.0	0
	MORE THAN 40 YEARS OLD	66.7	33.3	0
GENDER	MALE	23.6	76.0	0.4
	FEMALE	17.9	81.2	0.9
EDUCATION QUALIFICATION	UG	19.7	79.6	0.7
	MG	16.4	82.5	1.1
	DG	29.6	70.4	0
FIELD OF STUDY	SCIENCE	12.7	86.4	0.8
	SOCIAL SCIENCE	20.2	79.0	0.8
CITY/REGION	URBAN	21.0	78.0	0.9
	SUBURBAN	24.3	74.5	1.2
	RURAL	19.3	79.9	0.8

According to data analysis, most of the students who are 18 to 40 years old choose smartphones over laptops or tablets for IDLE activities. Students over 40 (66.7%) choose computers over cellphones or tablets to learn English informally because they are portable and have a widescreen for easy reading.

Other individual differences across gender, education qualification, fields of study, and city/region seem relished in using smartphones (M = 70.4% to 86.4%). Few participants chose tablets as their preferred device (M = 0 - 1.2%). From the table, it can be inferred that smartphones were students' best devices to facilitate IDLE activities. Data taken from FGD also encourage the online survey as follows:

> **Manto***: "I choose smartphones because they are practical and easy to carry everywhere I go. Moreover, I can use them in more varied conditions, for example, I can use my smartphone to watch YouTube while lying down in my bed".*
>
> **Eriana: "***Smartphone, because a smartphone is easier to carry apart from being easy to use without waiting for the access process."*
>
> **Zara***: "However, I prefer to use my smartphone compared to other devices because I can send my assignments, voice notes, and some images through my phone. Additionally, I can easily communicate with my friends through messengers".*

The participants primarily chose their smartphones as their favorite devices for performing IDLE activities. Several reasons for preferring smartphones to other devices such as laptops and tablets were the practical use that allowed the participants to bring their smartphones wherever they went, easy access to internet sources, and exclusive features for communication.

Barriers to Performance of IDLE Activities

In this section, the authors asked participants of the online survey to select freely barriers they experienced while performing IDLE activities and categorized the activities into six categories. There are no barriers (13.40%), internet connection (34.04%), not supported

device (24.87%), cost of the application (3.12%), and ICT competence of operating the application (4.73%).

Table 4
Barriers to performance of IDLE activities

INDIVIDUAL DIFFERENCES	6	NOTHING (%)	INTERNET (%)	DEVICE (%)	LANGUAGE (%)	COST (%)	ICT COMPETENCE (%)
AGE	18 - 23 YEARS OLD	13.3	34.3	24.7	20.4	3.0	4.3
	24 - 29 YEARS OLD	16.1	35.5	29.0	3.2	6.5	9.7
	30 - 34 YEARS OLD	27.3	18.2	9.1	18.2	9.1	18.2
	35 - 40 YEARS OLD	10.0	20.0	40.0	20.0	0	10
	MORE THAN 40 YEARS OLD	0	33.3	33.3	16.7	0	16.7
GENDER	MALE	12.2	35.4	24.0	21.7	3.5	3.1
	FEMALE	13.8	33.6	25.2	19.2	3.0	5.3
EDUCATION QUALIFICATION	UG	13.7	32.5	26.1	20.3	3.3	4.0
	MG	13.8	36.4	21.2	19.3	2.6	6.7
	DG	7.4	40.7	27.8	16.7	3.7	3.7
FIELD OF STUDY	SCIENCE	12.7	23.7	28.8	29.7	0.8	4.2
	SOCIAL SCIENCE	13.5	35.4	24.3	18.5	3.4	4.8
CITY/REGION	URBAN	13.1	33.2	29.6	16.8	2.7	4.6
	SUBURBAN	14.2	31.6	22.0	21.7	4.1	6.4
	RURAL	12.8	37.5	23.1	20.9	2.5	3.1

Based on Table 4, there are various percentages of each barrier chosen by the participants across individual differences. Those participants with individual differences slightly depict a similar percentage of barriers they experienced in performing IDLE activities. In addition, to a relatively comparable student comfort, the current research has additionally shown a substantial degree of comfort among participants with ICT for their informal learning.

According to the study's results, the main barrier to the performance of IDLE activities reported by participants is the internet connection. Unlike prior research conducted by Dolcy and Livingstone (2019), they claimed that the cost of accessing informal learning activities is a crucial obstacle. Nevertheless, their study's mode of learning differs from the current research; consequently, it can differ in the findings.

As narrated by a participant, the internet connection quality in her place was not impressive. Due to that, she could not access some applications instantaneously.

> **Eriana:** "……. *besides the storage section, there is another constraint. It is the signal problem. It is not strong enough to open applications simultaneously".*

Rudi, Satria, Ayu, and Endah are in a row with Eriana since they perceive that the most crucial obstacle is the internet connection in their areas. People from rural areas and urban and suburban people encounter the related issue (33.2% and 31.60%, respectively).

> **Rian:** *"Memory capacity is the main problem I face when downloading and installing some English learning applications on my phone. Because my phone memory is full*

sometimes, I find it difficult to install or use the apps, so I have to delete some of the existing folders".

Moreover, Rian commented that the memory capacity of his device became a critical issue. This inconvenience troubled him in installing the English learning application; consequently, he needed to free the space of his device by removing other installed applications. This statement was also agreed upon by Maya, Raditya, Sukma, and Puspa. They argued that the applications sometimes crash and stop working since their devices do not support running them. On the other hand, some participants also face other barriers (i.e., language barriers and the cost of application)

Dina: "*Sometimes, there are still many applications that only use English as language instruction. I do not really understand the meaning of English words and the explanation, so it is hard for me to understand how to use the apps on my device.*

Sekar: *"Lots of annoying ads. Sometimes, the app can only be accessed if it is premium. Thus, I need to pay to get a full version of the features".*

Another barrier examined in this study is ICT literacy. It covers how people use technology to process, obtain and review collected information for more content development and interaction with digital platforms and media. As a result, the participants were required to watch advertising video(s) to acquire every feature of the applications. Moreover, if they wish to have exclusive application features, they must compensate the amount of money to gain full-service access.

Discussion

There were two research questions unveiled in the present study. The first research question was about the preferred IDLE activities for enhancing formal learning. As explained in the previous section, this study employed quantitative and qualitative findings to conclude the preferences for informal digital learning of English activities. Based on qualitative data, the outcome presented that students most frequently listen to English songs to enhance their English skills. On the other hand, out of 34 IDLE activities, keeping an audio blog was the least chosen activity for IDLE. The present study's findings validated a study conducted by Jurkovič (2019). She researched 904 Slovene university students to know the behavior of their online informal learning of English. However, the participants in the current study were not indicated as frequent language learners performing the IDLE activities. This can be portrayed in the percentage of frequency showing the highest score of 79%. Meanwhile, the participants of her study could reach a score of 97%. The different gap was expected that the authors of the present study invited not only undergraduate degree students but also other educational qualifications, i.e., master and doctoral degrees. This may cause a difference in the percentage of IDLE activities.

Besides that, the qualitative findings were presented to support the detail of IDLE activities preferred by the EFL students. Participants outlined the three most frequent IDLE activities: playing online games, watching YouTube videos, and engaging in social media. Azzolini et al. (2022) uncovered that playing online games for a period of time influences language competence. Participants in which they have the opportunity to interact with people all over the world while doing leisure activities. The male participants agreed with it. They affirmed that they could communicate directly with the native speakers by doing online video

games, such as PUBG, Among Us, and FreeFire. Likewise, Sundqist (2019) authorized that students categorized as gamers show more advanced productive vocabulary and are excellent at challenging words. This valuable chance that they could not freely obtain in real-life interaction.

Furthermore, FGD data clarified that undergraduate students in informal English learning made greater use of technology support than undergraduate students in informal English learning. On the contrary, Blume (2020) has different results on this phenomenon. In his study, 150 German university students in the English department rarely employed this kind of technology to learn English (i.e., watching YouTube videos). He argued that this might occur due to both national and cultural demographic norms. These logical rationales can trigger the different results presented in the current research. There were several disparities noticed in this study. As explained before, the research involved varied participants in EFL settings who have differ ages, gender, education qualification, a field of study, and city/region. The findings can contribute to the body of research for a deeper interpretation of the various outcomes.

Besides watching YouTube videos, the use of social media was also favored by the participants in performing IDLE activities. Ismail & Shafie (2019) and Minasyan et al. (2018) conquered that social media can be used as one complete package of resourceful material. Much research has additionally conducted their research by involving social media for language learning (Anggraini & Cahyono, 2020; Lambton-Howard et al., 2021; Minasyan et al.,2018). Moreover, this present study revealed that individuals whose ages below 40 tent to use social media for their informal English learning. Unlike the young learners, senior participants whose ages more than forty years old testified that they did not get into social media as much as the other groups. It is in contrast with Tsai et al.'s (2015) study. They discovered that aged people were enthusiastic about using social media for informal learning. However, they did not specify what kind of informal learning they conducted. In this study, it was encountered that when learning English informally in online settings, older students ignored using social media as their preferred activity.

What has been revealed in the present study for the first research question was supported by previous studies (Cerrasoli et al., 2018; Lamb & Arisandy, 2020). Those previous studies claimed a positive correlation between IDLE activities and language competence improvements, such as listening comprehension and vocabulary mastery. The acquisition of the English language they adopted from informal learning was then able to influence their English formal learning. He and Zhu (2017) highlighted that the autonomous learning provided in IDLE activities was the key to controlling the learners' learning process and goal setting. Therefore, they can adjust what activities they should perform concerning the requirements of their formal learning. However, EFL students must be provided with tips and insights about effective informal learning behaviors. These recommendations can be exchanged from one-on-one training to formal practice sessions in different ways. . Additionally, teachers may supply the students with informal learning behaviors (ILBs) to demonstrate how to enhance resilience through school or out-of-school activities (Lee & Djati, 2019).

Another research question of the current research is to explore the engagement in IDLE activities, such as the preferred devices for accessing IDLE activities, and the barriers faced by the participants. The authors gave the participants three options for preferred devices (i.e., laptops, smartphones, and tablets). The participants primarily opted for smartphones as their favorite device for performing IDLE activities. Prior research studies underwent similar results related to smartphones as preferred devices (Jurkovic, 2019; Yang & Chen, 2020). Moreover, the current research findings added extensive evidence to the previous results of the individual differences. All the categories of individual differences indicated the highest

percentage of the use of smartphones in accomplishing IDLE activities. This approves what Elaish et al. (2017) exposed in their research. English resources can easily be found whenever and wherever smartphones are used in the virtual world. Yet, English teachers should also manage the drawbacks of using smartphones in the English learning process, as noted by Sad et al. (2020). They pointed out that the adverse consequences of smartphones (e.g., loss of focus, carelessness, distractions, wasting of time, or non-educational use of their phones) could make the learning process of English ineffective.

In addition to the results of the study in this second research question, the internet connection is the main barrier to performing IDLE activities reported by all participants across individual differences. Muilenburg and Berge (2005) previously discovered a similar outcome to the present study. They noted internet access as one of the barriers faced by the participants in their study. The study findings contrast with another prior research conducted by Dolcy and Livingstone (2019), which claimed that the cost of accessing informal learning activities is a crucial obstacle. Nevertheless, their study's mode of learning differs from the current research. The setting of their study took place in the Caribbean, which is considered an advanced region; consequently, internet connection stability is far better than in Indonesia. This is understandable why the participants in Dolcy and Livingstone's (2019) study did not criticize this issue. Moreover, the participants in the present study came from various places, i.e., urban, suburban, and rural areas, which resulted in the quality of internet connection. Rehm et al. (2018) additionally evoked that social capital should provide an infrastructure fully prepared for sharing knowledge and obtaining new ideas to promote informal learning to handle this problem. Thus, students can maximize to use of the internet to support their language learning (Lim & Aryadoust, 2021).

Furthermore, Sabah (2016) uncovered other barriers, such as low-speed, unreliable or unsafe internet access, small keypads/screens, insufficient memory, and battery life, and difficulty managing and updating mobile. A previous study contended that the barriers could make students deny the actual use of ICT in their learning process (Afrouz & Crisp, 2021; Trinder, 2017). Unfortunately, those issues are also found in this study. FGD participants further conveyed that their device does not support installing some English learning applications. This problem is a tedious challenge that needs to be addressed because it may not inspire students to perform IDLE using their gadgets (Elaish et al., 2017). Similarly, He and Zhu (2017) and Robey (2019) found that digital competence is strongly associated with students' behavior in their informal digital learning across their factors, such as age, gender, education level, and preferred devices. Therefore, it is not surprising that ICT competence becomes the minor barrier that the students with individual differences undergo while accomplishing IDLE activities.

Conclusion

Informal language learning in various activities such as playing online games, watching *Youtube* videos, and engaging in social media platforms enable students to enhance language skills (listening, speaking, reading, and writing) and language components (grammar, vocabulary, and pronunciation). Furthermore, it also increases students' self-confidence. Concerning gender, watching videos and listening to English songs on Youtube were the most preferred activities for male and female students in informal learning activities. Participants across individual differences also showed the same preference for using smartphones to perform their IDLE activities due to their portability and ease of use. However, they encountered difficulties such as internet connection, unsupported devices, price of the applications, and technological knowledge. The findings of the study shed some

light on the pedagogical implications. It is necessary to build students' awareness of the importance and benefits of IDLE activities.

Furthermore, teachers should know practical applications and how to operate them. Thus, they can bring those functions to the formal classrooms and train their students to use ICT for students' English learning outside classrooms effectively. Further research may focus on investigating the effectiveness of IDLE applications on language performance and its correlation with other individual differences, for instance, personality traits of students.

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Appendix

LIST OF FGD QUESTIONS

ICT Literacy
1. Below are several ICT-related activities that are commonly used. (Please choose any points you frequently use? a. Video blog (e.g., Youtube) b. Audio blog (e.g., podcast) c. Video Game (PUBG, Among us, Free Fire, etc) d. Social Media (Facebook, Instagram, Twitter, etc) e. Messenger (Whatsapp, Line, WeChat, etc) f. Learning application (Duolingo, Cake, English grammar, etc) g. Video Conference (Zoom, Google Meet, Microsoft Teams, etc) h. Others 2. Can you access those applications easily? 3. Are you actively using those applications? 4. Did you understand each point of English words you find in those applications? 5. Which device (smartphone, tablet, or computer/laptop) do you prefer to best facilitate English learning? Why? 6. What obstacle(s) do you experience in using some apps on your devices? 7. How would you use those applications to improve your English?
Informal Digital Learning of English (IDLE)

1. On average, during the past six months, how many hours each day did you spend in engaging in IDLE activities outside the classroom?
2. Out of 100%, what percentage of your learning of English has come from formal instruction (e.g., school), and what percentage has come from IDLE activities (e.g., Internet, watching English movies, or other media)?
3. What types of IDLE activities do you engage in? Can you describe how you engage in those?
4. What factors affect the different types of IDLE activities you use?
5. How long have you been using ICT for your IDLE?
6. How often do you use ICT for your IDLE?
7. Can you share your experience when using ICT for your IDLE?
8. Overall, do you think those applications help you improve your English?
9. What aspects of English language learning did you feel improved?
    a. Listening
    b. Speaking
    c. Reading
    d. Writing
    e. Vocabulary
    f. Grammar

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