Exploring the Influence of Technology on EFL Learning: A Comparative Analysis of Introverted and Extroverted Students

Syukron Fajriansyah[1] ✉

[1] *English Education Department, Institut Agama Islam Negeri Parepare, South Sulawesi, Indonesia*

✉email: syukron.fajriansyah98@gmail.com

ABSTRACT

This study examines the impact of technology on English as a Foreign Language (EFL) learning, specifically focusing on the utilization of technology by introverted and extroverted students. The objective is to provide a comprehensive overview of how technology is employed as a learning tool and to identify potential disparities between the two student groups. A descriptive research design was adopted, and qualitative analysis was used for data interpretation. The participants included introverted students and extroverted students, who were interviewed online using WhatsApp media. The findings indicate that both introverted and extroverted students employ technology, particularly learning videos, to enhance their language skills. However, introverted students tend to prefer using technology alone compared to their extroverted counterparts. These results offer insights into the differences between introverted and extroverted learners in utilizing technology for EFL learning. The study contributes to the existing literature on individual learner differences, with a specific focus on the use of technology by introverted and extroverted students in the EFL context.

Keywords: *EFL learning; extroverted students; introverted students; learning videos; technology.*

INTRODUCTION

In the contemporary educational landscape, technology has become an essential tool in enhancing the teaching and learning processes, particularly in the acquisition of language skills. The integration of technology into educational settings has become increasingly important as it provides numerous opportunities for both teachers and students to engage with learning materials in ways that were previously unimaginable. As we advance into the 21st century, the demands of modern education require the widespread use of technology to create dynamic, flexible, and personalized learning experiences (Melvina, Lengkanawati, & Wirza, 2020). The incorporation of technology in

English as a Foreign Language (EFL) classrooms has been especially transformative, as it has reshaped traditional pedagogical practices by providing learners with access to a wide range of digital tools that support their language learning journey. These tools, such as learning management systems (LMS), mobile-assisted language learning (MALL) applications, and AI-driven platforms, allow students to engage with the language in more diverse and engaging ways, thus enhancing both the quality and accessibility of language education.

The use of technology in education is particularly advantageous as it allows for learning to occur anytime and anywhere, fostering a more flexible approach to acquiring new knowledge. This flexibility provides students with the freedom to learn at their own pace and explore various subjects that align with their interests. Parsons and Taylor (2011) emphasize that technology has the potential to open up the world for learners, breaking down the barriers of traditional classroom learning. Through technology, students are no longer restricted to formal learning environments; instead, they can regulate their learning processes and explore content independently, which promotes greater autonomy and self-directed learning. This is particularly important as the modern education system shifts towards fostering more learner-centered approaches, where the focus is on cultivating students' ability to manage and take ownership of their own learning experiences.

In the context of language learning, the integration of technology has led to significant improvements in student engagement and motivation. Studies have demonstrated that the use of technological tools in language classrooms helps to enhance learners' language skills, such as reading, writing, listening, and speaking. Moreover, these tools provide learners with immediate feedback, which is crucial for improving language proficiency. Shadiev and Wang (2022) argue that technology not only enriches the language learning process but also helps students to build their digital literacy skills, which are essential in today's interconnected world. Researchers such as Honarzad and Rassaei (2019), Kul (2023), and Li and Alharbi (2025) have found that digital tools can foster learner autonomy, increase motivation, and create opportunities for collaborative learning, all of which contribute to a more engaging and effective learning experience.

While the benefits of technology in language learning are well-documented, it is equally important to consider the individual differences among learners that may affect how they interact with these tools. Individual differences refer to the distinct personal characteristics that set learners apart from one another and influence their engagement and success in the learning

process. According to Crozier (2013), these differences include a wide range of factors, such as cognitive abilities, emotional tendencies, and personality traits. Jonassen and Grabowski (2012) further categorize individual differences into three broad categories: cognitive variables, affective variables, and personality variables. These factors play a significant role in shaping how students approach learning tasks and how they engage with various learning tools, including technology.

One of the most widely studied individual differences is personality, particularly the traits of introversion and extroversion. As described by Jonassen and Grabowski (2012), introversion and extroversion exist on a continuum, with introverts typically characterized as introspective, quiet, and reserved, while extroverts are sociable, outgoing, and impulsive. These personality traits not only affect an individual's level of sociability and comfort in social situations but also influence how they prefer to engage in learning activities. For example, extroverted individuals tend to thrive in collaborative, social environments, whereas introverted individuals are more likely to prefer solitary, independent work. These differences can have a profound impact on how learners interact with technology in the context of language learning.

While there has been significant research on the impact of personality traits on learning behaviors, less attention has been given to how introverted and extroverted students use technology for language learning. Many studies have focused on the general effects of technology on language acquisition, but few have explored how learners with different personality traits engage with digital tools in distinct ways. This gap in the literature is particularly concerning, given the growing reliance on technology in education. Research in educational psychology acknowledges that personality traits, such as introversion and extroversion, can influence learning preferences and behaviors (Entwistle, 2013). However, there is still limited understanding of how these traits affect students' engagement with technology in the EFL context.

The current study aims to address this gap by investigating how introverted and extroverted students utilize technology in their language learning processes. Specifically, the study will explore how these two groups of learners use technological tools differently, such as whether they engage with digital platforms in distinct ways, whether they are more comfortable using certain types of technology, and how their personality traits influence their learning outcomes. This research will also seek to determine if there are discernible differences in how introverted and extroverted students benefit from the use of technology in language learning, providing valuable insights into how technology can be leveraged to better support both types of learners.
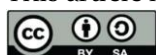
Understanding the role of individual differences, particularly personality traits, in the use of technology for language learning is crucial for designing effective and inclusive educational environments. Most existing studies treat learners as a homogenous group, without considering how differences in personality may affect their engagement with technology. By examining the differential utilization of technology by introverted and extroverted learners, this research will help to identify strategies for tailoring instruction to meet the specific needs of both types of students. The findings will provide educators with a deeper understanding of the unique learning preferences and behaviors of introverted and extroverted students, which can inform the development of more personalized and effective teaching methods in EFL classrooms.

In short, this study will contribute to the growing body of research on technology in language learning by exploring how personality traits influence the way students engage with digital learning tools. By examining how introverted and extroverted students use technology, the study will offer valuable insights into the design of more inclusive and effective language learning environments. The results will help educators better understand the diverse needs of their students and create learning experiences that accommodate these differences, ultimately enhancing the effectiveness of technology in supporting language acquisition.

METHOD

A descriptive research design was employed, incorporating qualitative analysis for data interpretation. As highlighted by Williams (2007), descriptive research serves as a methodological approach to comprehensively assess the current state of a phenomenon. In this study, qualitative research was chosen as the methodology. This choice was based on the fact that qualitative research enables the exploration and understanding of the subjective meanings attributed by individuals or groups to a social or human problem, as explained by Creswell (2014). Additionally, Snape and Spencer (2003) emphasized that qualitative research involves the analysis of emerging concepts and ideas, leading to detailed descriptions, classifications, identification of association patterns, and the development of typologies and explanations.

The participants in this study were five English students divided into three introverted students and two extroverted students. All participants are first-year English Language Study Program Masters students at Universitas Pendidikan Indonesia. To answer the research questions in this study, researcher adopted the questionnaire from Afrilian (2017) who previously conducted research on

the utilization of information technology as a student learning resource. It consists of ten-item questions and the items in the questionnaire for students were translated into Bahasa Indonesia in order to help them understand each item.

The data were collected from online interviews using Whatsapp. WhatsApp was selected as the primary platform for conducting the interviews for both practical and methodological reasons. First, it is a widely adopted communication tool among the participant population, making it an accessible and familiar medium. Second, WhatsApp offers both synchronous (calls, real-time voice messages) and asynchronous (text, recorded messages) modes of communication. This flexibility was especially relevant given the study's focus on personality traits.

Introverted participants were often more comfortable with text-based responses or sending pre-recorded voice notes, which allowed them time to reflect and reduce social pressure during the interview process. In contrast, extroverted participants generally preferred real-time voice calls, which aligned with their more spontaneous and socially-driven communication style. This alignment between medium and communication preference helped create a more authentic and comfortable environment for both groups, thereby enhancing the reliability of the data collected.

Then, the data were analysed using the Descriptive Analysis of Sugiyono (2013) based on several steps, namely data collection, data reduction, data display, and conclusion. In data collection, we collected through interviews to collect information about the use of learning technology for students. For data reduction, we select, simplify, and reduce useless data. We focused on data that answer research questions. Next, we displayed all the data obtained and then drawing conclusions. The conclusions drawn answer research problems, but do not rule out not being able to answer research problems because problems in qualitative research were still temporary and was develop after researchers in the field.

FINDINGS AND DISCUSSION

How do introverted and extroverted students use learning technology

Regarding the initial research question, the findings of this study will be categorized into two distinct sections. The first section pertains to the utilization of learning technology among introverted students, while the second section focuses on the utilization of learning technology among extroverted students.

Beginning with the use of learning technology by introverted students, all introverted students have answers relatively the same. This can be seen from items (Q2) What kind of technology do you often use in learning, (Q3) How often do you use technology as a learning resource, and (Q5) Do you use learning technology that is related to daily life. After doing data collection and data reduction, the data obtained is as follows.

The answer for item Q2 "The technology that I often use is smartphone and laptops, and for learning English I usually use learning videos that I get from YouTube." (I1), "The technology that I often use to study is video-based learning technology. I took the video from YouTube" (I2), and "Personally, the technology that I often use is videos from YouTube which give us a lot of learning related to language and academics" (I3). Based on the data collected from Q2, it can be concluded that the three participants have the same tendency to "Use learning technology in the form of video".

The answer for item Q3 "Of course very often, in addition to making use of existing books, I also look for other supporting references on the internet using technology" (I1), "I use it almost every day, and with the help of technology I can improve my knowledge about the English language" (I2), and "I use technology more often as a learning resource, for example, when online classes are held, I automatically use zoom. Then to collect assignments I also used to use WhatsApp." (I3). Based on the data collected from Q3, it can be concluded that the participants have similarities in the use of technology. They often use technology in the learning process, this can be seen from the answers of the three participants. Besides, they also used technology to help them learn English, for example, participant I2 used technology as a tool to improve his understanding of English.

The answer for item Q5 "Yes, of course, I use one of the learning technologies related to everyday life to communicate such as mobile phones. I usually use this technology as a supporting tool to find references related to topics that I have written or topics that I want to develop" (I1), "Of course yes, I often learn something related to everyday life. For example, I often learn and memorize new vocabulary that I need for daily activities" (I2), and "I am more focused on using learning technology for academic matters. However, this also relates to what I need in my daily life" (I3). the data collected from Q5 concluded that the introverted participants also have the same tendency in terms of using technology related to daily life. They use technology as a source of learning matters related to everyday life. I2 shows that technology plays an important role in learning English, this is also supported by I1 and I3 which use technology as a reference for finding and learning new topics related to daily life.

As for the use of learning technology by extrovert students, the researchers also conducted the same analysis as introvert students, which can be seen from items Q2, Q3, and Q5. The answer for item Q2 "So far, the technologies that I often use are digital technologies such as zoom, websites, platforms such as British Council and BBC Learning English, YouTube, and several online lectures at Google" (E1), and "The learning technology that I often use for learning is the technology that is more visual in explaining things such as learning videos or games" (E2). Based on the answers obtained from the participants, it can be concluded that the use of technology as the media of learning for extrovert students has in common that they are more likely to use technology in the form of learning videos to enhance their learning process.

The answer for item Q3 "Almost every time, because everywhere I use my smartphone and tablet where all my learning resources are there, starting from e-books, audiobooks, and even typing, everything is there, very often. maybe around 90%" (E1), and "Very often, when studying I always take advantage of technology" (E2). In this item, all extrovert participants have similar answers, namely almost every time they use learning technology and take advantage of technology to learn new things, as well as use technology as a learning resource.

The answer for item Q5 "Yes, I always use learning technology that suits my daily life. For example, I often use it to find new words that I find" (E1), and "Yes, because with technology we can study things around us in a more modern way which results are more effective and precise" (E2). Based on the data collection, the participants indicated that they also use technology to study things related to everyday life. For example, participant E1, he uses technology to find out new things around him.

In conclusion, researchers can conclude that the use of learning technology by introverted and extroverted students has similarities with each other in terms of how to use technology. In item Q2, introverted and extroverted students both use technology in the form of learning videos to learn new things and improve their language skills. In item Q3, all the participants also have the same tendency, namely using technology as a learning resource. Likewise, with item Q5, similarities were also found in that the use of technology is related to everyday life such as for example studying what is around and what is needed in social or academic life. From those, this research found that the participants reported that they have already used technology in the learning process.

Are there differences in the use of learning technology between Introvert and Extrovert students

When asked about the differences in the use of learning technology between introvert and extrovert students, This question is can be answered by analyzing the question items "do you use learning technology with friends or other people" (Q4), "do you prefer to use technology with other people or not" (Q6), "does using technology with other people provide more benefits for you" (Q7), "do you have problems or not in using technology by yourself" (Q8), "do you need help from other people in using learning technology" (Q9), and "does the technology you use have to be connected to other people" (Q10).

After collecting data through interview questions, data reduction was then carried out to select the most relevant data. The data that has gone through reduction can be displayed as follows:

"In using technology, I certainly use the technology by myself and I feel more free to do it alone. So far, I haven't encountered any problems when using learning technology on my own. However, if you have to use technology with other people, then I can do that too because by working together we can exchange ideas, information and learn from each other" (I1).

"Yes, I prefer to use technology myself because I think it makes me more comfortable and if I find a problem that I can't solve on my own then I will look for a solution. However, this also depends on the situation that I am experiencing, if this cannot be done alone then I will do it with other people. However, if I can still do it myself, then I will do it myself" (I2).

"I prefer using technology alone than using technology with other people. In general I don't have any problems when using technology myself, if I have problems using learning technology I don't need the help of others, because if I have problems then I will try to find a solution by searching the Internet. But if the context requires me to work with other people, then that also gives me more benefits" (I3).

From the data, it can be seen that in using technology by introvert students, they prefer to use the technology by themselves, because there are several reasons such as "more flexibility" and "more comfortable". Not only that, they also in their daily lives and in the learning, process prefer to do it themselves and if they have problems or difficulties in using learning technology, they will find a solution on their own before asking for help from others. However, in certain cases, such as group assignments, they will learn and work on these tasks together with other people.

"I'm more inclined to use technology with other people, because my only problem when using technology alone is being lazy, I tend to procrastinate more easily. It's different if I do something with other people so I can maximize it every time. It also depends on the project I'm doing. if I want to do something quickly

then I will do it myself but not all things I can also do alone. Collaborating with other people really adds insight and gives more benefits to me. That's why I prefer to do collaborative learning with other people" (E1).

"Actually, I prefer to use learning technology with other people, because we use technology with other people then we will get new things and teach each other what we don't know. I think collaborating with other people is very useful because being with other people really helps me to broaden my horizons and help each other" (E2).

Whereas extrovert students, it can be seen that they prefer to use learning technology together with other people. They say that using technology together with other people is a good thing because they can collaborate with each other, add insight, simplify the learning process and can maximize their time as well as possible. Compared to using technology alone, participant E1 showed that he could get rid of his laziness if he used technology together with other people, in this case the process of learning English.

From the findings above, it is revealed that introverted and extroverted students in this study often use learning technology as a means of learning. This study also found that both introverted and extroverted students used learning technology in the form of videos to help their learning process. However, in the process of using learning technology, this study found that introverted and extrovert students have differences. Introvert students are more likely to use technology alone without involving or getting help from other people, in contrast to extrovert students who choose to use learning technology together with others. Extrovert students believe that if they use technology together with other people, they will get many new things and make their learning process easier. However, in general, both introverted students and extroverted students believe that if the use of technology in learning must involve other people, they will involve other people.

These findings are broadly consistent with existing literature on personality and language learning. For instance, Mustoip et al. (2024) suggest that extroverted learners are generally more inclined toward interactive and communicative activities, whereas introverts tend to prefer individual, reflective learning tasks. Similarly, Sanudin et al. (2022) found that extroverted students responded more positively to collaborative e-learning environments, while introverted learners reported higher satisfaction with self-directed digital platforms. The results align with these trends but offer an important contribution by applying them directly to the use of digital technologies in the EFL context—a connection that remains underexplored in previous studies. This result also in line with research of Wang and Chen (2019), their study
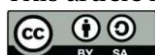
revealed that language learning using technology in the form of videos makes students explore more learning resources, students also find the attractiveness of learning English and its culture. In addition, learning English through videos on YouTube is considered more flexible, more interesting, and more interactive than formal learning in class.

Similarly, research findings of Kusmaryani (2019) report that students are very enthusiastic in exploring and practicing learning technology. Technology in the form of mobile learning applications provides opportunities for both teachers and students to improve the quality of teaching and learning. This applies to any subject by selecting the appropriate mobile learning app. Using technology can improve language learning skills, and help learners improve their learning skills (Ahmadi, 2018). Related to the use of technology by introvert and extrovert students, there is a study which found that in using technology, extrovert students spend most of their time communicating face-to-face with other people, while introverts spend more time alone. This has similarities with the findings in this study which show that introverted students prefer to use technology alone than with other people.

However, the results of other studies show different results. the research was conducted by Sawang (2017) found evidence of a relationship between extroverts and the level of students' engagement so that compared to introvert students, introvert students feel more engaged. The findings also offer subtle but meaningful nuances that challenge or extend previous assumptions. For example, while introverted learners in this study preferred less socially intense tools, they did not avoid communication altogether. Instead, they utilized technology—particularly WhatsApp and written discussion forums—as a mediating space that allowed for more controlled, thoughtful engagement. This suggests that technology can serve as a bridge for introverted students, helping them engage in communicative tasks without the real-time pressures often associated with classroom interaction. This result is consistent with Parker's (2016) book, which noted that computer-mediated communication environments reduce anxiety for introverts, allowing them to participate more confidently.

CONCLUSION

Based on the findings of the study, it is concluded that the introverted and extroverted students has similarities in terms of how to use technology. Introverted and extroverted students both use technology in the form of learning videos to learn new things and improve their language skills. All the

participants also have the same tendency, namely using technology as a learning resource. Likewise, similarities were also found in that the use of technology is related to everyday life such as studying what is around and what is needed in social or academic life. From those, this research found that the participants reported that they have already used technology in the learning process. This research also found that introverted students prefer to use technology alone than with other people. Therefore, based on these findings, it is suggested that using technology in the form of video is a positive thing to improve students' language learning.

While this study offers valuable insights into how introverted and extroverted students engage with technology in EFL learning, several limitations must be acknowledged. Most notably, the study involved a small, purposive sample of only five participants—three introverted and two extroverted students. This limited sample size constrains the generalizability of the findings to broader EFL learner populations or other educational contexts. The intent of this qualitative research was not to produce statistically generalizable results but rather to provide exploratory, in-depth perspectives on individual learner experiences. As such, the findings should be interpreted as context-specific and indicative rather than representative. The small sample enabled a rich, nuanced exploration of personal experiences, but future studies with larger and more diverse participant groups are necessary to validate and expand upon these preliminary insights.

Moreover, personality traits were self-reported and interpreted within the scope of this specific cultural and academic context, which may differ from other settings. These limitations highlight the need for further research that incorporates mixed-methods designs, larger participant pools, and varied educational environments to deepen our understanding of the relationship between personality and technology use in language learning.

This study is assumed to provide insight about Individual learners differences specially for introvert and extrovert students and to support reflection by giving information about the use of technology by introvert and extrovert students in EFL setting. However, further studies are required on this field to have more complete understanding on individual learners differences on introvert and extrovert. In addition, different techniques for data collection such as teacher journal, classroom observation, or in-depth interview are suggested. The future research is also recommended to have more respondent to bear more representative research findings.

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