

Research Article

Investigating the Influences of Computer Applications on Second Language Acquisition among Engineering Students

Florentino G. Pineda, Jr., Ph.D.

Department of English, Bulacan State University, Philippines
Email: florentinopineda1@gmail.com

Received: March 05, 2023

Accepted: March 19, 2023

Published: March 26, 2023

Abstract: Computer applications designed for second language learning are advantageous tools for everyone who is looking forward to enhancing their language skills for adept development. In the Philippines, English is a second language for it is considered a global way of building good relationships in the world community in terms of education, politics, and economic purposes. Social media platforms such as Skype, Facebook, and Twitter are programs that connect with people across the globe and may have limitations and downsides. While digital technology has a wide range of applications, it falls short when it comes to conveying learning concepts. In terms of conceptualization, effective digital instruction design has proved to be more resourceful than technology so far. The SLA theory aims to stress the importance of learning a second language. MALL is a form of language learning that uses a mobile device to help or enhance the learning process. The effect of computer-mediated communication on language learning is positive and moderate. This study focuses on engineering students at Bulacan State University's Main Campus during the 2020-2021 school year to examine the effect of computer applications on second-language acquisition. The sample for this study consists of engineering students from Bulacan State University's Main Campus during the 2020-2021 school year, with simple random sampling used to ensure equal representation. Tables and charts are used to present the data gathered, and the respondents reported an average of 5 electronic gadgets per household and spent an average of 9 hours per day using them during the COVID-19 pandemic. The findings indicate that incorporating computer applications with conventional teaching methods is the most effective way for students to learn a second language. However, because the study only focused on engineering students at Bulacan State University's Main Campus during the 2020-2021 school year, more research is needed to improve the accuracy of the analysis. The data collected has an estimated margin of error of ± 11.24 percent, which suggests that further investigation is required to determine the reliability of the study's results.

Keywords: Computer Applications, Engineering, Second Language Acquisition.

Introduction

Computer technology has become increasingly integrated into people's daily lives, especially during the COVID-19 pandemic, which has led to a surge in online communication through smartphones and computers. The pandemic has also prompted many educational institutions to adopt online learning models that rely on computer technology and the Internet, rather than face-to-face interactions. Modern computers come pre-installed with various languages from around the world, with English being the default language in most cases. Most smartphones are made to accommodate the needs of various people with different languages. They can be customized to accommodate the user and select the language they prefer based on the pre-installed languages. There are various applications as well as searchable information over the internet that are made by various people with

different native languages. Some computer applications such as Skype, Facebook, and Twitter can be used to communicate with different people across physical boundaries as well as time and space. Simply put, it connects people wherever they are as long as there are signals. A computer application is a piece of software that runs on your machine. Applications include web browsers, e-mail services, word processors, games, and utilities. System software consists of background programs that allow applications to run. Assemblers, compilers, file management tools, and the operating system itself are among these programs. Before the micros, a few small businesses used computers, but more for professional purposes rather than as business instruments. Second Language Acquisition is the language learned by a person other than the native language. English is the second language of most Filipinos in the Philippines. The reason being it is taught in schools as a subject starting from first grade until reaching college. Many books about Science, Mathematics, and the like are mostly translated into English.

The development of computers and new technologies gave rise to different approaches or solutions to the acquisition of a second language. Many ideas had been made to apply computer applications to help Language learners such as English as a second language (ESL) and English as a foreign language (EFL) learners for continuous professional improvement leading to their specific style of language. These computer applications and other language learning programs can offer second language learners and the EFL to study independently and allow learners to work on their learning resources at any time of the day. These applications can provide ESL learners with unlimited access to new vocabulary, grammar, speech forms, pronunciation, and language capability.

One of the ESL learners that uses computer applications in second language acquisition is engineering students. Many opportunities may arise for engineering students as a result of these computer applications, such as the opportunity to communicate with other engineers from around the world, the opportunity to collaborate with them and share different ideas about one design, and the opportunity to understand the styles and designs of other engineers in their country. This may result in a larger workplace, which means an engineer may learn more skills from engineers in other countries, a higher profit if the engineer wants to work abroad, and the engineer may learn styles and ideas from other countries by communicating with people there or working in that country and using it as a variable to consider on his designs.

Students may become overly reliant on technology and have difficulty expressing full opinions or thinking independently. This can lead to informal language creeping into formal writing assignments, resulting in a decline in overall writing quality. Teachers have noticed this trend and are working to address it in the classroom.

In the research on 2,462 AP and NWP teachers, Purcell, Buchanan, and Friedrich (2013) discovered that the line between "formal" and "informal" writing is becoming increasingly blurred, resulting in some students using informal language and style in formal writing assignments. Additionally, it is crucial to teach students how to write for different audiences in various "voices" and "registers." However, there is a growing gap in students' access to and proficiency with digital tools, as well as the "digital tool as toy" mindset that many students develop when they first encounter digital tools as children. Consequently, using digital tools to address certain issues frequently creates new issues, which means that, unlike traditional teaching methods, there are unintended consequences.

The advent of new technologies has undoubtedly revolutionized modern writing and writing skills. However, the transfer of the essence of text messages to students' writing has resulted in a sense of complacency. The availability of text prediction options has made writing easier and faster for students, but it has also reduced their mental capacity and persistence (Alhusban, 2016). This, in turn, can have a negative impact on their ability to acquire a second language. The internet provides diverse information on different languages and cultures, leading to the emergence of new forms of language, such as "Netspeak," which combines numbers, letters, and symbols to convey meaning

(Alhusban, 2016). As a result, the acquisition of informal writing or speaking of a second language may occur. In short, while new technologies offer benefits, their unintended consequences cannot be ignored.

Using computer applications in second language acquisition comes with limitations that can affect students' learning. In her research, Insel (2010) notes that despite remarkable advancements in communication technology, there are still inherent limitations and constraints. While digital technology products have their uses, they may not be effective in delivering learning concepts. Successful interactive instruction design in terms of conceptualization has proven to be more effective than relying solely on technology.

The start of the school year 2020-2021 in the Philippines was greatly impacted by concerns surrounding COVID-19 in the early part of 2020. The Department of Education (DepEd) announced on May 5th that classes would commence on August 24th and would be conducted both physically and remotely depending on the current status of the pandemic (Magsambol, 2020, para. 1 & 6). According to Briones, DepEd Secretary, areas under enhanced population quarantine will likely have lessons offered online, and the curriculum and teaching strategies will be modified to align with the current standard in response to the pandemic (Magsambol, 2020, para. 1 & 6). As a result, schools have begun implementing Synchronous (SL), Asynchronous (AOL), and Remote printed (RPL) modes of learning, with SL and AOL utilizing computer applications to teach and engage with students.

While there have been studies that show the detrimental effects and disadvantages of using computer applications in learning a second language, students believe that using computer applications in learning a second language is advantageous because it provides access to a wealth of knowledge and allows them to interact with people all over the world. "Participants said that mixing multiple modes helped them to practice their English and produce language in a way that was easier for them than just writing," according to Dzekoe (2017), in contrast to Purcell, Buchanan, and Friedrich (2013). This study put the argument to the test by contrasting student engagement in two modes of discussion: face-to-face and electronic. The research also discovered that in electronic conversation, students used language that was more formal and complex lexically and syntactically than in face-to-face discussion, showing yet another potential benefit of computer-mediated communication. Many researchers have previously investigated the use of computer-assisted language learning (CALL), which led to the creation of other concepts such as computer-mediated communication (CMC) and mobile-assisted language learning (MALL).

CALL (Computer Assisted Language Learning) is also described as a method of language teaching and learning in which a computer is used to assist in the presentation, reinforcement, and evaluation of material to be learned, with a significant interactive component (Davies, n.d.). "With these developments in [SLA Theory] and the optimism of those building CALL, the future looks promising," says the author Chapelle, (2009) concluded in her published research on the relationship between Second Language Acquisition Theory (SLA Theory) and CALL. At the same time, technological advancements outpace advancements in language learning practices...the majority of language learning and teaching practitioners believe this is a field that deserves attention" (p. 750-751). SLA research aims to identify and demonstrate how non-native languages are learned, interpreted, and used in the broadest context. Transitional stages-interlanguage development-along a diverse developmental spectrum is inherent to the SLA method (Rothman and Slabakova, 2018).

Computer-mediated communication (CMC), in which people interact with one another using computers and networks, allows people to communicate across vast distances and time zones, removing the time and geographic constraints of in-person communication. Since research into computer-mediated communication (CMC) in the field of second language acquisition (SLA) grows, this study found out that English language learning has a moderate impact on the respondents after

assessing the post-test. CMC also seems to be more successful at promoting the development of writing skills but less effective at improving oral skills (Lin, 2015). Meanwhile, MALL is a type of language learning that is aided or enhanced using a mobile device and was derived from CALL. Cell phones and other portable devices are affecting how people learn in a variety of disciplines and contexts, including language learning...What makes mobile technology so fascinating is that it facilitates movement between indoors and outdoors, as well as between formal and informal environments, enabling learners to take the lead for at least part of the journey. Mobile devices have a clear role to play in reaching this aim if language learners' desires and preferences are allowed to affect what is learned and how it is learned. Kukulska-Hulme (2009) notes that mobile devices have the potential to significantly aid language learners by allowing their desires and preferences to shape what and how they learn. Research has shown that MALL provides benefits to language learners, including the development of proper speech, listening abilities, and reading and writing capacity (Akr, 2016).

The objective of this study is to examine the effectiveness of computer applications in aiding second-language acquisition, particularly for engineering students who need to learn not only spoken languages but also computer languages. Through this research, it is anticipated that computer applications are found to have a significant impact on second-language learning and that students are inclined to use them to facilitate their language learning. Additionally, the study intends to investigate how the COVID-19 pandemic has influenced students' reliance on technology devices and computer applications. Another goal is to determine the effects of integrating computer programs in a classroom environment.

The purpose of this research is to collect data on the influence of computer applications on second language acquisition, and aims to answer the following questions:

- a) What is the average number of computer devices per household, and how many hours are spent using them?
- b) How has the COVID-19 pandemic affected students' reliance on computer devices for language learning?
- c) In what ways do computer applications motivate students to learn a second language?
- d) How do computer applications affect the process of second language acquisition?
- e) What are the potential benefits of using computer applications for second language acquisition?

This study targets engineering students and seeks to gauge their perspectives on the topic. All data collected through the survey are kept confidential. The survey classifies computer devices as desktop computers, laptops, smartphones, and tablets/iPads.

The term "second language" refers to a language that students have already mastered or wish to acquire in addition to their native tongue. Second Language Acquisition refers to the process of learning a language other than one's native language. In the Philippines, most Filipinos consider English their second language. It is taught in schools as a subject from first grade up until college. Moreover, many Science and Mathematics books are also translated into English.

This research consists of three main components: input, process, and output. The inputs include the students' profiles, such as their age, year level, and course, as well as the number of computer gadgets per household and the number of hours spent daily using these gadgets. The process involves the use of a survey questionnaire distributed proportionately to engineering students at Bulacan State University using a simple random sampling method.

The questionnaire includes questions about the respondents' ranking of certain sentences and their preferred method for acquiring/learning/understanding a second language. The output of this study is the impact or effects of using computer applications in second-language acquisition among engineering students.

Methodology

This study utilized a quantitative research approach that assesses the impact or effects of computer applications on the second-language acquisition of engineering students. The target population for this study is the first-year engineering students from Bulacan State University's Main Campus during the school year 2020-2021. To ensure fair analysis, a simple random sampling technique is employed, giving each member of the population an equal chance of being selected. Based on Slovin's formula and a margin of error of $\pm 11.24\%$, the sample size is determined to be 77. The research instrument used to collect data is a survey form, and survey analysis techniques to obtain the desired data.

According to the data collected, the majority of the respondents are 19 years old, with 34 responses accounting for 44.16% of the total. The second highest age group is 18 years old, with 18 responses and 23.98% of the total, followed by 20 years old with 17 responses and 22.08%. 6 respondents or 7.79% are 21 years old, while the least number of respondents are 22 and 23 years old with only 1 response each, accounting for 1.30% of the total.

According to the collected data, the majority of respondents are pursuing BSME, with 26 responses, followed by BSCE, BSCpE, BSECE, BSMfE, BSIE, and BSME, respectively. On the other hand, the smallest number of respondents are from the BSEE program, with only 3 responses. Based on the collected data, the majority of the engineering students are in their first year, comprising 79.22% of the total. The third-year students come next with 16.88%, while the smallest percentage is made up of second-year students at only 3.90%.

Results and Discussion

After collecting data from 77 participants, the study found that the average number of computer gadgets per household among engineering students' families at Bulacan State University's Main Campus is 5. The data also revealed that the class interval of 4-6 had the highest frequency, with 35 participants reporting owning between 4 and 6 computer gadgets. This implies that the majority of engineering students' families at Bulacan State University's Main Campus own between 4 and 6 computer devices. The margin of error was calculated using the sample respondents and the estimated population size. Based on these calculations, the margin of error for the data is $\pm 11.24\%$. This means that the true number of computer gadgets per household for engineering students' families at Bulacan State University's Main Campus could be 11.24% higher or lower than the reported average of 5.

The study provides valuable insights into the number of computer gadgets per household among engineering students' families at Bulacan State University's Main Campus. The results indicate that the average number of computer gadgets is 5, with most families owning between 4 and 6 devices. However, it is important to consider the margin of error of $\pm 11.24\%$ when interpreting the data.

Based on the collected data from 77 respondents, it was found that the average number of hours spent daily on using computer gadgets is approximately 9 hours, with the class interval of 7-9 having the highest frequency at 22 respondents. This suggests that students spend a significant amount of time using their computer gadgets, accounting for around 37.5% of their time per day.

The study shows that 22.1% of the sample population uses their gadgets for 13 hours or more, which is equivalent to approximately 54% of their daily time. However, the Centers for Disease Control and Prevention (CDC) recommends 7 hours of sleep per day. This means that students spend around 76.47% of their time awake using their computer gadgets, leaving only roughly 4 hours for other activities such as eating or bathing. It is important to note that this data is subject to a $\pm 11.24\%$ margin of error, based on the sample respondents and the estimated population size. The data collected suggests that the COVID-19 pandemic has forced engineering students to rely more heavily on computer gadgets. This is reflected in the significant increase in the percentage of respondents

who reported an increased dependence on computer gadgets during school activities. The shift in the respondents' answers highlights the impact of the pandemic on the education sector, which has led to a massive increase in online learning.

The study also reveals that before the pandemic, the majority of respondents remained neutral on the issue of reliance on computer gadgets. This may be because traditional face-to-face classes did not require the same level of reliance on technology as online classes. However, the COVID-19 pandemic has forced universities to adapt to online learning, resulting in a significant increase in the use of computer gadgets. The data collected indicates that the COVID-19 pandemic has affected the way engineering students approach their studies. The reliance on computer gadgets during school activities has increased significantly, and this shift is likely to continue as universities continue to embrace online learning as a viable mode of education.

The results indicate that most of the participants of the research, in terms of their preferred approach to acquiring, learning, and understanding a second language, favor the traditional method of face-to-face interaction. A small proportion of the participants opted for the use of computer devices and or machines as their preferred method of language acquisition. The results suggest that despite the existence of technology in learning, the face-to-face language learning approach is still the primary preference for most language learners. This preference could be attributed to various reasons, such as the value of human synergy in language learning, the effectiveness of traditional methods, and personal learning preferences.

The research results do not indicate that cutting-edge has no role to play in language learning. It suggests that a vast of language learners still prefer the old method of face-to-face interaction with a facilitator, though technology can offer miscellany benefits such as access to online resources, interactive language learning software, and remote learning opportunities. The findings of this research provide valuable insights into language learners' preferences regarding language acquisition methods. Furthermore, this can be conducted to discover the other underlying reasons behind these preferences and to assess the effectiveness of traditional and technology-based language learning approaches and techniques. This awareness can help to inform the development of effective language learning tools and programs that meet the different needs and preferences of language learners.

Recommendations

Based on the study's findings, the following are highly recommended:

- a) Higher Educational institutions should go back to the traditional face-to-face learning approach for this is the preferred method by ESL learners.
- b) Technology-based learning tools and resources as supplementary methods of language acquisition must be incorporated into the learning language programs. The following may be included to enhance the learning experience of the students: interactive language learning software, online resources, and remote learning opportunities.
- c) Language teachers must have further training on the traditional and technology-based language learning methods that cater to students' diverse learning preferences.
- d) A follow-up study that investigates the underlying reasons behind language learners' preferences for traditional or technology-based language learning methods is recommended for the further dissemination of information to the development of more effective language learning tools and programs that will meet the different needs and preferences of ESL learners.
- e) Face-to-face classroom interaction remains the preferred method of language learning for most language learners, and technology-based learning tools and resources still play a valuable role in enhancing the language learning experience.

Declarations

Acknowledgments: My sincerest gratitude to the administrators and students in the College of Engineering for their invaluable support and who have been my collaborators, particularly my MEE

(Mechatronics Engineering) group 2 students SY 2020-2021 who have provided the necessary data and so much needed information for the creation of this research paper.

Conflict of interest: Unidentified collaborators who have provided necessary information but due to the loss of file, names of the former MEE (Mechatronics Engineering) students have not been identified and included and this is due to when the Institution shifted from Google to Microsoft.

Funding: The author did not receive support from any organization for the submitted work.

Author Contribution: Designed the paper, reviewed and analyzed data, revised/organized the manuscript, provided critical feedback, and repackaged the presentation of the paper.

References

1. Alhusban, A.M. 2016. The impact of modern technological tools on students writing skills in English as a second language. *US-China Education Review*, 6(7): 438-443.
2. Cakir, I. 2016. Mobile assisted language learning (MALL). *Current Trends in ELT*, 170-189.
3. Centers for Disease Control and Prevention. 2017. CDC-How Much Sleep Do I Need?-Sleep and Sleep Disorders. Retrieved from https://www.cdc.gov/sleep/about_sleep/how_much_sleep.html
4. Chapelle, C.A. 2009. The relationship between second language acquisition theory and computer-assisted language learning. *The Modern Language Journal*, 93: 741-753.
5. Davies, G. (n.d.). CALL (computer assisted language learning). LLAS Centre for Languages, Linguistics and Area Studies. Retrieved from <https://www.llas.ac.uk/resources/gpg/61>
6. Dzekoe, R. 2017. Computer-based multimodal composing activities, self-revision, and L2 acquisition through writing. *Language Learning and Technology*, 21(2): 73–95.
7. Insel, A.G. 2010. Effective Interactive Software Design in Computer-Assisted Second Language Acquisition. Master of Arts Thesis, Graduate Institute of Social Sciences, Istanbul.
8. Kukulska-Hulme, A. 2009. Will mobile learning change language learning?. *ReCALL*, 21(2): 157-165.
9. Lin, H. 2015. A meta-synthesis of empirical research on the effectiveness of computer-mediated communication (CMC) in SLA. *Language Learning and Technology*, 19(2): 85-117.
10. Magsambol, B. 2020. Classes to open on August 24–DepEd. *RAPPLER*. Retrieved from <https://www.rappler.com/nation/depd-announcement-classes-resume-august-24-2020>
11. Purcell, K., Buchanan, J. and Friedrich, L. 2013. The impact of digital tools on student writing and how writing is taught in schools. Washington, DC: Pew Research Center, 16.
12. Rothman, J. and Slabakova, R. 2018. The generative approach to SLA and its place in modern second language studies. *Studies in Second Language Acquisition*, 40(2): 417-442.

Citation: Florentino G. Pineda, Jr. 2023. Investigating the Influences of Computer Applications on Second Language Acquisition among Engineering Students. *International Journal of Recent Innovations in Academic Research*, 7(3): 36-42.

Copyright: ©2023 Florentino G. Pineda, Jr. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.