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An Analysis of AI Chatbot Usage Patterns and Self-directed Writing of Third Year EFL Students: The Case of Tebessa University

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In the name of Allah, the most Compassionate and the most Merciful

"There is no god but He: That is the witness of Allah, His angels, and those endued with

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[Ali'imran, 3:18].

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Dedication

I dedicate this work to my family, friends, colleagues and to everyone I knew in this very long

journey

To my mother, father and brothers who have always supported me in whatever, wherever and

whenever I went for or mapped a goal until I achieve it.

To my little brother Oudai, whom I love the most.

To my precious sister.

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To all my cousins, whom I consider brothers.

Thank you all for being you, and I wish we last.

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I dedicate this work to my family, friends, colleagues and to everyone I knew in this very long

journey

To my mother, whom I love the most and the most precious human in my life

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doing all this hard work, for having no days off, for never quitting, for being me all the time.

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List of Abbreviations

AI: Artificial Intelligence

AIEd: Artificial Intelligence Education

ANOVA: Analysis of Variance

CALL: Computer Assisted Language Learning

CD-ROM: Compact Disk—Read-Only Memory

CTML: Cognitive Theory of Multimedia Learning

EAD: L'écriture autodirigée

EFL: English as a Foreign Language

ELT: English Language Teaching

ESL: English as a Second Language

ICT: Information and Communications Technology

MALL: Mobile-assisted language learning

PC: Personal computer

PDA: Personal Digital Assistant

RQ: Research Question

SDL: Self-Directed Learning

SDLI: Self-Directed Learning Instrument

SDLR: Self-Directed Learning Readiness

SDW: Self-Directed Writing

SPSS: Statistical Package for the Social Sciences

SRSSDL: Self-Rating Scale of Self-Directed Learning

TAM: Technology Acceptance Model

TR: Theory of Reasoned Action

TV: TeleVision

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Abstract

Echahid Cheikh Larbi Tebessi University faces the challenge of equipping EFL learners with effective writing skills. Third-year EFL students at this university are at a critical stage where they are expected to deepen their language competencies and cultivate greater autonomy in their learning processes. This study investigates the relationship between Artificial Intelligence (AI) chatbot usage patterns and Self-Directed Writing (SDW) among third-year English as a Foreign Language (EFL) students at Cheikh Laarbi Tbessi University. It aims to explore how students utilize AI chatbots for different purposes in EFL writing, understand how the frequency of interaction with chatbots correlates with students' self-directed learning (SDL) in EFL writing and identify any potential moderating effects of student-related factors (gender, prior AI chatbot experience, satisfaction with writing skills, and frequency of writing practice outside formal settings). A mixed-method approach was employed, involving a questionnaire and interviews with 104 participants. The findings revealed a very weak positive correlation between AI chatbot usage and SDW, suggesting that students who use chatbots more frequently tend to exhibit higher levels of self-directedness in their writing. However, the moderating factors did not significantly influence this relationship. The study also found that students utilize AI chatbots for various purposes, including vocabulary assistance, sentence structure, grammar, brainstorming, outlining, proofreading, and summarizing. While most students reported positive experiences, concerns were raised about accuracy and potential negative impacts on creativity. The study concludes that AI chatbots can be valuable tools for promoting SDL in EFL writing, but their use should be carefully considered and integrated into instruction to maximize benefits and address potential limitations.

Keywords: Artificial intelligence, chatbots, SDL, EFL writing, language learning.

General Introduction

1. Background of the Study

The increasing integration of AI in various sectors, including education, has sparked interest in its potential to revolutionize teaching and learning practices (Meirinhos et al., 2023). One such application of AI is chatbots, which are conversational agents designed to simulate human-like interaction through text or voice (Labadze et al., 2023). Chatbots have gained prominence in language learning, particularly in EFL contexts, due to their ability to provide instant feedback, personalized learning experiences, and opportunities for autonomous learning (Mohamed & Alian, 2023).

Research on the use of chatbots in language learning has shown promising results. For instance, Kwon et al. (2023) found that second language learners who used a chatbot for writing practice demonstrated significant improvement in their writing skills compared to those who received traditional instruction. Similarly, Harunasari (2023) explored the integration of ChatGPT, an AI chatbot, in an EFL writing class and found that it facilitated idea generation and improved writing efficiency.

However, the impact of chatbots on SDL in EFL writing remains an area that requires further investigation. The SDL is a learner-centered approach where individuals take responsibility for their learning goals, strategies, and outcomes (Knowles, 1975). It is characterized by autonomy, self-motivation, and the ability to monitor and evaluate one's progress (Garrison, 1997). Understanding how chatbots can support or hinder SDL in EFL writing is crucial for maximizing the benefits of this technology.

2. Statement of the Problem

The increasing use of AI in education, particularly through chatbots, has shown potential in improving language learning, offering personalized learning experiences and fostering autonomous

learning. Despite the recognized benefits, there remains a significant gap in understanding the extent to which AI chatbots influence SDL in EFL writing.

While studies have delved into AI paraphrasing tools, automated writing evaluation systems, and AI-based instruction, research on the correlation between AI chatbot usage and students' SDL in writing is noticeably limited. This study seeks to bridge this gap by examining the relationship between AI-chatbot interactions and the SDW levels of third-year EFL students at Tebessa University. It aims to understand the detailed aspects of this relationship, considering the moderating effect of student-related factors such as gender, previous experience with AI chatbots, level of satisfaction with writing skills and frequency of practicing writing in English outside of formal educational settings.

3. Aim of the Study

The main goal or purpose of the study is to investigate the relationship between AI chatbot usage patterns and SDW for third-year EFL students. Specifically, the study aims to explore how the frequency of interaction with chatbots correlates with students' SDL in EFL writing and whether there are any mediating or moderating effects of various factors on the relationship between chatbot use and SDW.

4. Research Questions

1. How are students using AI chatbots for different purposes in relation to EFL writing?

2. How does the frequency of interaction with chatbots correlate with students' SDW?

H_0: Frequency of interaction with Ai Chatbots does not correlate with EFL students' SDW

H_A: Frequency of interaction with Ai Chatbots is positively correlated with EFL students' SDW.

3. To what extent do participant-related factors moderate the relationship between chatbot use and SDW?

H$_0$: There are no participant-related factors which moderate the relationship between chatbot use and SDW

H$_A$: Participant-related factors do moderate the relationship between chatbot use and SDW.

5. Research Methodology

The researchers conducted a correlational study to establish relationships between variables and opted for a mixed method approach using a questionnaire as the quantitative data collection tool (primary) and an interview as the qualitative data collection instrument (secondary). A mixed methods approach integrates quantitative and qualitative research methods. Quantitative research deals with numerical data and statistical analysis, while qualitative research focuses on non-numerical data. Triangulation is used to enhance the credibility of results by combining both types of data. Convenience sampling was chosen due to constraints, with a sample size of 104 third year EFL Students determined using an online calculator. Data collection instruments include a questionnaire with 52 questions divided into sections on background information of the respondents, SDW, and AI chatbot usage. Interviews supplement the questionnaire with 19 questions. Reliability analysis yielded strong internal consistency scores. Data analysis involved coding responses, descriptive and inferential statistics using Statistical Package for the Social Sciences (SPSS), and graphical analysis. The methodology aims to ensure the credibility and reliability of the research findings on AI chatbot usage and SDW among third-year EFL students.

6. Structure of the Dissertation

The work is organized into two main chapters, preceded by a general introduction and followed by a conclusion. The general introduction sets the stage by presenting the background of the study, the problem it addresses, the research questions, an overview of the research methodology, and the study's structure. The literature review begins by highlighting the importance

of EFL writing skills, the role of technology in language learning, and the emergence of AI in education, emphasizing the significance of investigating AI chatbots' impact on EFL writing from students' perspectives.

The first main section delves into technology in language learning, exploring theories such as the Technology Acceptance Model (TAM) and the Cognitive Theory of Multimedia Learning (CTML), and providing historical context on technology integration in language education, with a focus on Algeria. It also reviews AI chatbots in education and their applications in language learning.

The second section focuses on EFL writing, examining traditional instruction methods, challenges faced by learners, strategies for enhancement, and the integration of technology, particularly AI chatbots, summarizing relevant studies and addressing criticisms and concerns. The third section discusses self-directed learning (SDL) in EFL writing, covering its definition, characteristics, theoretical frameworks, and measurement tools, as well as the relationship between SDL and language proficiency, and how AI chatbots influence SDL. It also considers the impact of individual differences, such as gender and age, on these variables. The fourth section identifies gaps in the literature and justifies the importance of the proposed research. The conclusion of the literature review summarizes key findings and transitions to the methodology section.

The second chapter outlines the methodological approach for the empirical data collection phase, detailing the research method, target population, sample, and data-gathering instruments, with an emphasis on the student questionnaire and interview. It describes the research procedures, including the script and recording methods, and presents, analyzes, interprets, and discusses the fieldwork results, concluding with a summary of findings. The final chapter synthesizes the dissertation, restating the research objectives and questions, elucidating principal findings and their

implications, addressing study limitations, and offering recommendations for future research. The general conclusion underscores the dissertation's contributions to the field and suggests avenues for further exploration..

Chapter One: Literature Review

Introduction

In EFL classrooms, writing holds immense importance as a vital communication skill and a cornerstone of language acquisition. Writing empowers individuals to express themselves, refine their communication abilities, and cultivate critical thinking (Chappel, 2011, as cited in Yamina,

2014). Moreover, writing is indispensable in academic and professional contexts, with a significant portion of daily communication occurring through written mediums (Walsh, 2010, as cited in Yamina, 2014).

The integration of technology in language learning has also become increasingly vital, offering unique opportunities for learners to interact with the target language (Taj et al., 2017). By providing access to authentic materials, technology fosters engagement and facilitates a deeper understanding of real-world language use (Loncar et al., 2021). Furthermore, technology has a positive impact on student motivation by fostering autonomy and empowering learners to take control of their language learning journey (Peterson, 2017). Additionally, AI is poised to transform education by making it more personalized, engaging, and efficient. Previous studies suggest the potential for an educational revolution driven by AI (Meirinhos et al., 2023). Investigating the impact of AI chatbots on EFL writing from the students' perspective is crucial for identifying learner needs and enhancing the learning process, ultimately leading to a better understanding of AI's effectiveness in education.

1.1 Technology in Language Learning

1.1.1 Theories Related to Language Learning and Technology

1.1.1.1 Technology Acceptance Model. Several theoretical models have been proposed to investigate and elucidate the elements influencing individuals' decisions to adopt, reject, or persist in using new technology (Ajzen, 1985; Ajzen & Fishbien, 1980; Venkatesh & Davis, 2000; Venkatesh et al., 2003, as cited in Alfadda & Mahdi, 2021). Davis (1989, as cited in Alfadda & Mahdi, 2021) built upon the Ajzen and Fishbien model of Theory of Reasoned Action (TRA) to create the Technology Acceptance Model (TAM), which offers a theoretical framework for understanding the connection between attitudes, intentions, and behaviors. Empirical evidence has

confirmed that the TAM is effective and concise in forecasting technology acceptance and adoption.

The TAM is a tool used to predict how likely someone is to use a new technology. It's based on the idea that people's actions are driven by their intention, attitudes, and social pressures. TAM suggests that if we understand how people use a technoloy initially, we can predict how widely it will be adopted in the future.

The TAM comprises five variables: perceived ease of use, perceived utility, attitude toward use, behavioral intention to use, and actual usage. The model's two key criteria are perceived ease of use, which is the idea that minimal effort is needed, and perceived utility, which is the opinion that the technology improves work performance. The key components of TAM are these two characteristics, together with attitude toward usage. Outcome variables consist of behavioral intention to use and actual usage. Behavioral intention can predict use, but a great user experience can also influence behavioral intents. External factors in this context consist of subjective norm, computer self-efficacy, and enabling circumstances as identified by Scherer et al. (2019, as cited in Alfadda & Mahdi, 2021).

1.1.1.2 Cognitive Theory of Multimedia Learning. Richard E. Mayer and other cognitive researchers popularized the CTML, which suggests that multimedia aligns with how the human brain learns. According to the multimedia principle (Mayer, 2005a), individuals acquire deeper learning from words and visuals together compared to words alone. Multimedia is typically defined by academics as the integration of text and images. They propose that multimedia learning takes place when individuals create mental representations based on these words and pictures (Mayer, 2005b). Words can be spoken or written, whereas visuals can be any type of graphical imagery such as artwork, photography, animation, or video. Multimedia instructional design aims to optimize learning effectiveness by integrating words and graphics based on cognitive research.

The CTML is based on many cognitive theories such as Baddeley's working memory model, Paivio's dual coding theory, and Sweller's Cognitive Load Theory. It is a cognitive theory of learning that fits within the broader scope of cognitive science and the information-processing model of cognition. The information processing model proposes many memory stores controlled by mechanisms that transform inputs into information (Moore et al., 2004).

The CTML posits that learners strive to establish meaningful connections between words and visuals, leading to deeper learning compared to using words or pictures alone (Mayer, 2009). CTML states that a primary goal of multimedia education is to prompt the learner to construct a cohesive mental picture based on the content delivered. The learner's role is to comprehend the provided content actively, therefore creating new knowledge.

1.1.2 History of Technology in Language Education

1.1.2.1 The Broader Context. Technology aiding language education has evolved through two main phases: audio media and visual media. Audio resources are considered the earliest instances of technology employed in language instruction. Audiotape originated in the late 1950s. Early audiotape machines were large and heavy. The audiocassette, introduced in the 1970s, revolutionized the medium and greatly improved language instruction. Audio became widely used after the 1970s, leading to the creation of audio language labs that enabled instructors and students to manage access to audio resources. In the early 1980s, a new type of digital audio known as the audio compact disc or CD was released and gained rapid popularity. In the 1980s, computer-based digital audio emerged as a significant kind of digital audio (Ürün, 2015).

Ürün (2015) states that the growth of audio media in English training has led to interactive and comprehensive usage of real listening resources, making it a common tool in language classes. Listening is a key aspect of language acquisition, and the development of audio media may be seen as a significant step in incorporating technology into language education. At the start of learning a

language, learners require a significant amount of understandable input, particularly through reading and listening, to help them gradually develop their understanding of the language system, as proposed by Krashen's (1985, as cited in Ürün, 2015) input theory. An extensive listening activity that includes recognizable things might help kids connect reading and hearing.

Audio technology should be utilized interactively through computers and projection equipment to provide visual accompaniment and allow students to listen to passages read by native speakers of the target language. Today, textbooks provide instructors and students with interactive audio recordings (CDs) to enhance acquisition of new vocabulary and cultural themes related to the target language. Cellular phones and Mp3 players are commonly utilized as additional listening devices, allowing learners to engage in listening exercises from any location. Images and videos are essential components of visual media frequently utilized in language instruction (Ürün, 2015).

Photographic immobile frames, such as slides or frames on a videodisc or CD ROM, are often used visual media. Slide projectors and overhead projectors were specialized devices used for displaying still frames in the 1960s, but they have now evolved into user-friendly technologies. While they had benefits in the past due to their simple technology, they are currently becoming obsolete. Slides may now be produced on digital media, allowing teachers to utilize high-quality photographs and arrange the slides in various formats tailored to particular student groups (Ürün, 2015).

Motion video and TV were widely utilized throughout a certain time frame starting in the 1960s. Teachers still utilize them in classrooms as needed, but computers now integrate the technology to do many functions simultaneously, eliminating the need for separate devices (Ürün, 2015).

With the widespread use of the internet and computers in educational settings, a fusion of technology has developed, allowing teachers and students to create detailed instruction using

instructional technologies. It is crucial to emphasize that the extensive utilization of visual media relies on computers (Ürün, 2015).

Computers have been utilized for language instruction in visual media since the 1960s, as noted by Seferoğlu (2005, as cited in Ürün, 2015). The use of computers into language instruction led to the development of a new concept known as Computer Assisted Language Learning (CALL). This 50-year history may be categorized into three primary phases: behaviorist CALL, communicative CALL, and integrative CALL. Each stage aligns with a certain degree of technology and a particular instructional method (Warschauer, 2004, as cited in Ürün, 2015). Warschauer (2004, as cited in Ürün, 2015) stated that behaviorist CALL was utilized for teaching reasons during the 1960s and 1970s. He mentioned that in addition to behaviorist learning, this type of CALL commonly involves repetitive linguistic exercises, including drill-and-practice. He noted that this paradigm is particularly prevalent in the United States, where the computer is viewed as an automated educator that is non-judgmental and enables students to study many subjects independently.

Communicative CALL emerged in the early 1980s as behaviorist approaches to language teaching were being rejected. This phase coincided with the introduction of personal computers, which provided new opportunities for individual study. Proponents of communicative CALL stress the importance of focusing on teaching how to use language forms rather than teaching the forms directly (Ürün, 2015).

Computer-assisted instruction should prioritize encouraging students to create original utterances and effectively use the target language for communication, particularly in speaking and writing. The communicative Computer-Assisted Language Learning (CALL) approach emphasizes students' actions using technology and their interactions with each other or the computer during study sessions. Although communicative CALL was first seen as a more advanced version of

behavioristic CALL, it began to face significant criticism for not meeting the evolving requirements of language learning (Ürün, 2015).

Communicative Language Teaching (CLT) theory, developed by the Council of Europe in response to the evolving requirements of language education following the elimination of borders in Europe in the 1960s, became closely associated with the integration of computers in language instruction (Ürün, 2015). Warschauer and Healey (1998, as cited in Ürün, 2015) argued that this connection prompted a significant reassessment of both the theory and application of communicative language teaching. Teachers were shifting from a cognitive approach to communicative education to an interaction-based approach, focusing more on the use of language in genuine social settings (Warschauer & Healey, 1998, as cited in Ürün, 2015). Task-based, project-based, and content-based methods strive to immerse learners in genuine situations by leveraging various language learning and use abilities. This led to the development of a new perspective on technology and language acquisition known as "integrative CALL" (Warschauer, 1996, as cited in Ürün, 2015). Warschauer recommended that learners should integrate the use of various technology instruments into their regular language learning activities, rather than relying on weekly visits to the computer lab for separate tasks (Warschauer, 1996, as cited in Ürün, 2015).

Currently, Information and Communications Technology (ICT) is used interchangeably with CALL. The word encompasses technologies where the computer is central, such as CALL, the Internet, and several conventional computer applications. New ICTs such as Cloud, Twitter, Facebook, webquests, games, and mobile devices like tablets and smartphones are being utilized for language learning and teaching (Ürün, 2015)

1.1.2.2 The Algerian Context. Seddiki (2016) stated that the historical context of technology integration in teaching EFL in Algeria reflects a gradual shift towards embracing technology tools to enhance language education. Traditionally, the focus was on conventional

teaching methods such as the Grammar-Translation Method, which emphasized translation exercises and grammatical rules. However, with the advancement of technology and the increasing importance of English in various domains such as trade, journalism, and media in Algeria, there has been a growing recognition of the need to incorporate ICT in language teaching. Despite initial limitations in the use of ICT in university syllabuses, students and teachers have shown a keen interest in leveraging technology for language learning (Seddiki, 2016).

This historical evolution underscores a transition towards recognizing the benefits of technology integration in teaching EFL in Algeria, aiming to facilitate the teaching profession and enhance language learning outcomes (Seddiki, 2016).

1.1.3 Technology and Language Skills Developments

The language teacher should be familiar with the socio-cultural backgrounds of the pupils, their academic credentials, economic status, technological access, preferred technology tools, as well as their attitudes and views about technology. Technology integration should occur both within and outside the classroom, with a particular emphasis on utilizing mobile devices. The utilization of interactive boards, computers, projectors, and tablet personal computer personal computer (PC) in the classroom, together with technologies like the internet, smartphones, and Personal Digital Assistant (PDA) outside the classroom, keeps students consistently engaged in learning (Stojković et al., 2018). Utilizing technology tools like interactive boards, tablet PCs, and cellphones is crucial for maximizing the educational benefits of multimedia elements such as video, images, audio, and animations (Stojković et al., 2018).

According to Stojković et al. (2018) interactive boards can improve students' memorization, facilitate active learning, and motivate pupils to review previously taught content. The teachers and students have good opinions towards the interactive board. Language instructors said that utilizing

interactive boards had a beneficial and occasionally significant impact on language instruction and altered their position in the classroom. It is crucial that students use the interactive board during instructional sessions while integrating this technology.

Another information and communication technology tool is the tablet PC and PDA. However, there is a lack of thorough research on the efficacy of tablet PCs in foreign language education. However, some studies have demonstrated the impact of tablet PCs and PDAs on the educational setting (Chen & Hsu, 2008; Golonka et al., 2014; Lan et al., 2007, as cited in Stojković et al., 2018). Issues arise with educational methods and integration when utilizing these technologies in foreign language education. In this context, it is important to establish strategies and ways to enhance the efficient utilization of technology

Technology integration necessitates modern teaching methods and effective classroom management. Research on the efficacy of cellphones in foreign language education has primarily concentrated on brief messaging or instant messaging (Stockwell, 2009, as cited in Stojković et al., 2018). Smartphones are expanding daily and provide several features, particularly internet access. Currently, students find it more convenient to engage in learning activities beyond the traditional classroom setting and actively participate in teaching-learning activities. Students may choose to get instruction using mobile technologies (Gunuc & Kuzu, 2014; Thornton & Houser, 2003, 2005, as cited in Stojković et al., 2018). Therefore, these technologies should be incorporated into the classes to the fullest extent. The instructor must incorporate these technologies to develop the following language skills.

1.1.3.1 Listening. Listening skills are fundamental in the English language. Brett (1997, as cited in Stojković et al., 2018) asserts that listening capacity is crucial in language development. Listening entails comprehending the accent, pronunciations, intonation, word meanings, and the

meaning conveyed via speech (Saricoban, 1999, as cited in Stojković et al., 2018). The viewer should comprehend all these things simultaneously.

Listening skills are crucial in the context of English as a second language (ESL), as stated by Nomass (2013, as cited in Stojković et al., 2018). Integrating multimedia technology into English teaching and learning is crucial for improving students' listening skills. Audio, video, and animation multimedia technologies are more ubiquitous and are emerging as a valuable tool for listening. Media resources, including radio and TeleVision (TV) shows, enhance students' listening skills, boost self-confidence in listening, and promote the use of media in the absence of access to native speakers or professors. Utilizing computers in listening exercises offers both visual and audio stimuli that improve listening skills and aid in skill development (Hoven, 1999, as cited in Stojković et al., 2018).

Utilizing technologies like radio, audio-tapes, podcasts, tape recorders, iPods, and films in English education enables students to grasp intonation, pronunciation, and various accents (Nomass, 2013, as cited in Stojković et al., 2018).

1.1.3.2 Reading. Various technologies can enhance the development of reading skills in English education. Levine et al. (2000, as cited in Stojković et al., 2018) identified text reading as a significant challenge in learning the English language. While reading, students might get new facts and concepts that can enhance their English vocabulary. Case and Truscott (1999, as cited in Stojković et al., 2018) said that students can enhance their independence by engaging in computer-based reading activities that allow them to engage with texts. Current research suggests that pupils get advantages from text reading education that incorporates technology. Students can enhance their reading skills by utilizing resources like internet surfing, multimedia software, electronic dictionaries and glossaries, online newspapers/books, and reading-focused computer applications (Nomass, 2013, as cited in Stojković et al., 2018).

Reading-based computer applications, electronic glossaries, and electronic dictionaries enhance pupils' vocabulary, while multimedia software boosts motivation. Reading materials like periodicals, newspapers, and encyclopedias accessible online play a significant role in enhancing pupils' reading abilities. Online English learning platforms enhance reading activities and provide opportunities for vocabulary interaction, making the learning experience enjoyable (Stojković et al., 2018).

1.1.3.3 Speaking. Mastering speaking skills, often considered the final language skill to develop, can be a significant challenge in learning the English language.

Technology can enhance the development of this talent more effectively. Bachate (2016, as cited in Stojković et al., 2018) found that language laboratories had a favorable impact on students' communication and speaking skills. ESL students can practice speaking using technologies like Internet voice chat and speech synthesis programs. Internet voice chat systems, such as Jepson (2005, as cited in Stojković et al., 2018), are beneficial for improving speaking skills. They provide students with the opportunity to converse with native speakers at any time and place. Conversely, AI software can enhance speaking abilities by improving vocabulary and pronunciation (Nomass, 2013, as cited in Stojković et al., 2018).

The utilization of automated speech recognition in mobile applications has been found to enhance pronunciation abilities and boost motivation (Ahn & Lee, 2016, as cited in Stojković et al., 2018). Sun et al. (2017, as cited in Stojković et al., 2018) discovered that social networking platforms have enhanced the speaking skills of ESL learners. Hwang et al. (2016, as cited in Stojković et al., 2018) discovered that web-based storytelling boosts student enthusiasm, fosters creativity and imagination, and offers students increased chances to practice speaking.

1.1.3.4 Writing. Research indicates that technology has enhanced students' writing skills and motivated them to write, improving the quality of their work (Bialo & Sivin-Kachala, 1996; Fidaoui et al., 2010; Lam & Pennington, 1995, as cited in Stojković et al., 2018).

Blachowicz et al. (2009, as cited in Stojković et al., 2018) found that utilizing ICT tools in teaching writing skills enables students to explore their identities and fosters their autonomy. Conversely, producing work on computer programs may be more convenient and enjoyable since software can rapidly detect faults. ESL students may utilize Wiki to apply formatting such as italics, underline, color changes, font size adjustments, and spell check and grammatical control using the application (Nomass, 2013, as cited in Stojković et al., 2018). Using technology for writing skills may be both motivating and enjoyable for ESL students in this setting.

Blogs are a common method used for teaching writing skills, as noted by (Yunus et al., 2013, as cited in Stojković et al., 2018). Kelly and Safford (2009, as cited in Stojković et al., 2018) state that a blog writer offers an authentic digital platform for communication. It serves as a tool for producing text as well as providing various viewers and access points. Lenhart et al. (2008, as cited in Stojković et al., 2018) found that blogs are popular among young people as a means to communicate their opinions, and most students with personal blogs seem to have a penchant for writing. Furthermore, students can engage with others through email, social networks, online text messaging, and blogs. Therefore, pupils may enhance their writing abilities through realistic assignments.

An e-portfolio is a digital repository that displays students' experiences, advancements, and accomplishments, together with academic writings they have produced. The e-portfolio prioritizes students' self-assessment and independence, focusing on the process above the final outcomes. E-portfolios assist students in reflecting on their language abilities and knowledge. In this regard, it is a tool that may be utilized for enhancing writing skills as cited in (Stojković et al., 2018).

West (2008, as cited in Stojković et al., 2018) stated that transitioning from traditional written responses to online forums allows students to develop their unique style and personality in their assignments. Students are aware of the online social environment surrounding their work, prompting them to seek to impact their peers. When organizing social networking activities like Facebook and Twitter, it is important to focus on the writing style suitable for social networks. Abbreviations and emojis might hinder the progress of writing skills. Social networks like Twitter, which have character constraints, can motivate students to utilize language efficiently.

1.1.4 Technology in EFL Writing

Technology is rapidly becoming a crucial tool in language learning. Writing is a key aspect of language acquisition, and technology plays a vital role in training for EFL and ESL writing, particularly in the last two decades (Al-Wasy, 2020).

Various research investigating the impact of technology on writing were consolidated in many reviews by Goldberg et al. (2003, as cited in Al-Wasy, 2020), Little et al. (2018, as cited in Al-Wasy, 2020), and Williams and Beam (2019, as cited in Al-Wasy, 2020). Goldberg et al. (2003, as cited in Al-Wasy, 2020) performed a meta-analysis to determine the impact of computer technology on writing in K-12 education. The results showed that students who used computers to study writing generated written output that was longer and of higher quality.

Little et al. (2018, as cited in Al-Wasy, 2020) did a meta-analysis on the impact of technology-based writing instruction on writing outcomes, including just six research. The results indicated that instructional technology significantly influenced writing outcomes. Williams and Beam (2019, as cited in Al-Wasy, 2020) examined the impact of technology on writing, however they did not do a meta-analysis. Their investigation was structured as a literature review. Wollscheid et al. (2016, as cited in Al-Wasy, 2020) performed a literature review

comparing studies that utilized digital writing tools like computers and tablets with those that used traditional writing instruments such as pen and paper.

Researchers have recently demonstrated a growing interest in utilizing CALL and mobile-assisted language learning (MALL) to enhance learners' writing abilities (Al-Wasy, 2020). Multiple research have explored the use of CALL in enhancing writing skills (AbuSeileek & Abualsha'r, 2014; El-Ghonaimy, 2015; Fenglong, 2015; Ghafoori et al., 2016; Jafarian et al., 2012; Pirasteh, 2014; Zaini & Mazdayasna, 2015, as cited in Al-Wasy, 2020). Several researches have investigated the impact of MALL on ESL and EFL learners' writing skills (Al-Wasy & Mahdi, 2016; Hamad, 2017; Justina, 2016; Khalil, 2017; Kundu & Bej, 2019; Susanti & Tarmuji, 2016, as cited in Al-Wasy, 2020).

In recent years, several researchers and writing teachers have begun using technology into their writing workshops, believing it will greatly enhance students' writing abilities. Utilizing mobile devices and their applications in writing classes can boost learners' motivation, inspire creativity in their written work, and improve their ability to generate new ideas and correct punctuation and sentence structure errors (Al-Wasy, 2020). Tam (2012, as cited in Al-Wasy, 2020) stated that mobile phones provide learners with a chance to practice writing, even beyond the confines of their educational institutions.

Recent focus has shifted towards the advantages of utilizing various technology gadgets to enhance learners' writing skills. Iwasaki et al. (2019, as cited in Al-Wasy, 2020) emphasize the significance of e-learning in enhancing academic writing skills. Ellison and Drew (2020, as cited in Al-Wasy, 2020) confirm that computer games are useful in enhancing authors' cognitive capacities and enhancing their organizing skills. Several authors have emphasized the significance of technology in enhancing the learning environment, encouraging students to write, and enhancing the quality and quantity of their work. Technology also helps save time for both students and

instructors and reduces errors by offering more editing tools (Alghasab, 2020; Baker & Lastrapes, 2019; Gharehblagh& Nasri, 2020; Jafarian et al., 2012, as cited in Al-Wasy, 2020).

1.1.5 AI Chatbots in Education.

Chatbots are conversational or interactive agents that offer quick answer to the user. Chatbots are increasingly being utilized to promote student connection in our present world of technology where communication and many other activities rely significantly on online platform. Most students in higher education own a smartphone, making them frequent users of online apps. Chatbot systems can be implemented as mobile web applications to help with learning (Okonkwo & Ade-Ibijola, 2021).

The application of AI in education is fast rising (Roos, 2018, as cited in Okonkwo & Ade-Ibijola, 2021). One of the most prominent AI technologies used to enhance teaching and learning activities is the Chatbot system (Okonkwo & Ade-Ibijola, 2020). Chatbots are being evaluated as a valuable tool to enhance learning within the educational setting (Clarizia et al., 2018, as cited in Okonkwo & Ade-Ibijola, 2021). In this Fourth Industrial Revolution age, educators can administer education either through the classroom platform or through an online platform employing different technology tools such as Chatbot systems (Mendoza et al., 2020, as cited in Okonkwo & Ade-Ibijola, 2021). This project focuses at an online educational environment where students may learn utilizing Chatbot technology. The use of chatbot technology in education is one of the most significant techniques to upgrading and encouraging a more customized learning experience (Cunningham-Nelson et al., 2019, as cited in Okonkwo & Ade-Ibijola, 2021).

Chatbots can instantly provide students with standardised details, such as course contents, practice questions and answers, evaluation criteria, assignment due dates, advice, campus path direction, and study materials (Benotti et al., 2017; Cunningham-Nelson et al., 2019; Durall &

Kapros, 2020; Ismail & Ade-Ibijola, 2019; Mabunda & Ade-Ibijola, 2019; Ranoliya et al., 2017; Sinha et al., 2020, as cited in Okonkwo & Ade-Ibijola, 2021).

AI-powered chatbots have progressed greatly since the 1960s, with early examples including ELIZA, PARRY, ALICE, SmarterChild, Siri, Watson, and Facebook's Messenger. These chatbots replicate human communication utilizing text or voice interaction, giving information in a conversational manner. Early examples include ELIZA, PARRY, ALICE, and SmarterChild, which were developed by Joseph Weizenbaum at MIT between 1966 and 1972 respectively. In 2011, Apple released Siri as a voice-activated personal assistant, while IBM's Watson showcased the capability of natural language processing and machine learning algorithms in answering complicated inquiries. Facebook's Messenger platform in 2016 allowed companies to construct AI-powered conversational agents, leading to a proliferation of chatbots on platforms like Facebook and Google Duplex (Labadze et al., 2023).

Labadze et al. (2023) also said that more recently, more complex and adept chatbots wowed the globe with their talents. Among these, ChatGPT and Google Bard are among the most deep AI-powered chatbots. ChatGPT is an AI chatbot developed by OpenAI. It was initially announced in November 2022 and is open to the general public. ChatGPT's competitor Google Bard chatbot, created by Google AI, was initially unveiled in May 2023. Both Google Bard and ChatGPT are big language model chatbots that undergo training on enormous datasets of text and code. They exhibit the ability to generate language, develop various creative material, and deliver relevant responses to inquiries, however their accuracy may not always be ideal. The fundamental distinction is that Google Bard is trained on a dataset that contains text from the internet, whereas ChatGPT is trained on a dataset that includes text from books and journals (Labadze et al., 2023). This indicates that Google Bard is more likely to be up-to-date on current events, whereas ChatGPT is more likely to

be correct in its replies to factual inquiries (AlZubi et al., 2022; Rahaman et al., 2023; Rudolph et al., 2023, as cited in Labadze et al., 2023).

Most of the current intelligent AI chatbots are web-based systems that adapt to the actions of both instructors and learners, boosting the educational experience (Chassignol et al., 2018; Devedzic, 2004; Kahraman et al., 2010; Peredo et al., 2011, as cited in Labadze et al., 2023). Labadze et al. (2023) stated that AI chatbots have been employed in both instruction and learning within the education industry. Chatbots specialize in individualized teaching, homework aid, concept learning, standardized exam preparation, conversation and cooperation, and mental health support. Some of the most prominent AI-based technologies /chatbots used in education are:

Bard, released in 2022, is a big language model chatbot produced by Google AI. Its powers include creating writing, language translation, producing other sorts of creative material, and offering helpful solutions to inquiries (Rudolph et al., 2023). Bard is currently in development, but it has the potential to be a significant tool for education.

ChatGPT, introduced in 2022 by OpenAI, is a huge language model chatbot that can generate text, develop various creative material, and offer useful replies to inquiries (Dergaa et al., 2023; Khademi, 2023; Rudolph et al., 2023). However, there are various difficulties associated to the use of ChatGPT in education, such as accuracy, dependability, ethical issues, etc (Labadze et al., 2023).

Ada, created in 2017, is a chatbot that is used to deliver individualized instruction to pupils. It can answer questions, offer feedback, and allow tailored learning for pupils (Kabiljo et al., 2020; Konecki et al., 2023). However, the Ada chatbot has problems in interpreting complicated requests. It might misread context and deliver erroneous replies

Replika, established in 2017, is an AI chatbot platform that is aimed to be a friend and companion for students. It can listen to students' issues, provide suggestions, and make them feel

less alone (Pentina et al., 2023; Xie & Pentina, 2022). However, considering the personal nature of chats with Replika, there are real worries around data privacy and security.

Socratic, created in 2013, with the purpose of building a community that made learning accessible to all students. Currently, Socratic is an AI-powered teaching platform that was bought by Google in 2018. While not a chatbot per se, it offers a chatbot-like interface and functionality meant to aid students in learning new ideas (Alsanousi et al., 2023; Moppel, 2018; St-Hilaire et al., 2022). Like with other chatbots, a worry emerges when students could unduly rely on Socratic for learning. This might lead to a lessened emphasis on critical thinking, as students may elect to utilize the platform to receive answers without obtaining a meaningful comprehension of the underlying principles.

Habitica, founded in 2013, is intended to assist students create effective study habits. It gamifies the learning process, making it more interesting and engaging for pupils. Students may use Habitica to manage their academic obligations, assignments, and study routines. By converting their to-do list into a game-like experience, students are driven to accomplish their activities and create productive habits (De Sales & Antunes, 2021; Zhang, 2023). However, the gamified element of Habitica might accidentally offer distractions, especially for students who are readily lured into the game component rather than focused on their actual academic tasks.

Piazza established in 2009, is intended to enhance conversation and cooperation in educational environments, notably in schools and academic institutions. It provides a forum for students and instructors to engage in conversations, ask questions, and share information relating to course content and assignments (Ruthotto et al., 2020; Wang et al., 2020). Because debates on Piazza are user-generated, the quality and accuracy of comments might vary. This heterogeneity may result in situations where pupils do not get accurate and relevant information.

1.1.6 AI Chatbots in Language Learning.

Chatbots utilize natural language processing to mimic human-like communication. Kim et al. (2019, as cited in Mohamed & Alian, 2023) said that Chatbots provide a communication experience comparable to interacting with a human user. Chatbots strive to replicate human interactions by mimicking human speech patterns to create the illusion of interacting with a human rather than a machine.

Kuhail et al. (2022, as cited in Mohamed & Alian, 2023) found that utilizing various forms of communication such as text, audio, images, haptics, gestures, and others to help learners complete educational activities resulted in successful chatbot engagement. The interactive conversational program, known as a Chatbot, is engaging and attractive to those learning a new language. When interacting with chatbots instead of humans, learners tend to feel more comfortable and less anxious (Kim, 2017, as cited in Mohamed & Alian, 2023). Prior studies have explored the use of Chatbot as a beneficial and valuable resource in an EFL setting (Bibauw et al., 2022; Fryer et al., 2020; Fryer & Nakao, 2009; Haristiani, 2019; Kim et al., 2021; Klimova & Seraj, 2023; Nghi et al., 2019, as cited in Mohamed & Alian, 2023).

Utilizing chatbots enhances the grammatical abilities of EFL learners, as mentioned by Kim (2019, as cited in Mohamed & Alian, 2023). Abu Shawar (2017, as cited in Mohamed & Alian, 2023) claimed that using chatbots as conversational partners improves learning results. Neo (2022, as cited in Mohamed & Alian, 2023) focused on enhancing the online learning experience in previous research. Goda et al. (2014, as cited in Mohamed & Alian, 2023) studied the effects of Chatbot on critical thinking, whereas Mahmoud (2022, as cited in Mohamed & Alian, 2023) examined its effect on speaking skills performance. Multiple assessments of conversational agents in language acquisition have previously been conducted.

Magerira et al. (2022, as cited in Mohamed & Alian, 2023) created an AI chatbot to educate high school pupils on cultural material in a foreign language. The curriculum has been assessed by Greece's public and private language schools. The researchers argue that combining the acquisition of foreign languages and cultural knowledge is optimal for AI chatbot technology. Furthermore, Chatbot also facilitates several effective teaching techniques. Lin and Hwang (2018, as cited in Mohamed & Alian, 2023) suggested that providing students with suitable technology and mentorship tools is essential to help them organize information and enhance their speaking skills in a flipped classroom setting.

Lin and Mubarok (2021, as cited in Mohamed & Alian, 2023) utilized a mind map-guided AI chatbot in a university setting to enhance students' speaking skills and interactions in an English-language classroom that followed a flipped learning approach. The authors said that the mind map-guided Chatbot facilitated human-robot interaction and enhanced students' English-speaking skills.

Kim et al. (2019, as cited in Mohamed & Alian, 2023) discussed many types of intelligent chatbots such as Eliza, Alice, Clever Bot, and Elbot Talk to Eve in the context of language acquisition. The authors determined that chatbots had a good impact on students' communication skills by enhancing the frequency of interactions, hence boosting students' motivation and fostering a greater interest in learning, especially in terms of communicative proficiency.

Kim (2016, as cited in Mohamed & Alian, 2023) studied the impacts of two forms of voice communication: peer-to-peer voice chats and interactions with chatbots. One hundred eighty-one undergraduate students from Korea were recruited to take part in an English-speaking program aimed at enhancing their speaking abilities. The study found that speaking proficiency increased in all conversation scenarios. The author contended that voice chat enables EFL students to enhance their speaking skills, promotes pleasant perceptions of English Language Teaching (ELT), and reduces negative feelings.

Despite the benefits, the utilization of chatbots for language acquisition is now limited and faces major hurdles. Some studies have depicted these issues. Kim et al. (2019, as cited in Mohamed & Alian, 2023) observed that only a small number of chatbot systems provide direct speech recognition system interaction between chatbots and individuals. They also explored chatbot applications, a restricted use of AI in teaching. Furthermore, another research examined challenges related to users repeatedly asking the same question due to difficulty recalling past encounters (Roos, 2018, as cited in Mohamed & Alian, 2023).

Yin and Satar (2020, as cited in Mohamed & Alian, 2023) showed a restriction in the language competency of eight Chinese EFL learners, divided into two groups, through the use of a chatbot software. The groups consisted of lower- and higher-level learners. High language-level learners expressed dissatisfaction with chatbots, whereas individuals with inadequate language abilities would benefit the most from interactions with instructional agents.

Wang and Petrina (2013, as cited in Mohamed & Alian, 2023) also used a chatbot called Lucy to assist students in language learning. Lucy possesses skills in vocabulary and grammar, matching, providing feedback, and eliciting suitable student replies. Yet, there were limits, including the requirement for deeper cultural understanding and ongoing feedback tailored to individual learners.

1.2 EFL Writing

1.2.1 Traditional EFL Writing Instruction Methods

Three primary methods for instructing writing have been promoted and employed in recent decades of English language education.

1.2.1.1 The Product Approach. Teachers using the product approach concentrate on the final written piece and evaluate it based on criteria like vocabulary, grammar, spelling, punctuation,

content, and organization. The standard process involves giving a writing assignment, collecting it, and then returning it for additional review with the problems either fixed or indicated for the student to remedy (Raimes, 1983).

1.2.1.2 The Process Approach. This approach emerged in the mid-1970s as a replacement for the product approach. It involves four steps in writing: prewriting, composing/drafting, revising, and editing (Tribble, 1996). The phases are recursive and nonlinear, allowing them to interact with one other during the writing process. For instance, several authors revisit prewriting tasks during the revision stage to cultivate a fresh concept or enhance a perspective. The process method prioritizes rewriting and input from others, leading students to create several versions with extensive editing of phrases and rearranging of paragraphs. Correcting spelling and punctuation is not crucial in the initial phases.

Badger and White (2000) criticized the process approach for treating the writing process as uniform for all writers, irrespective of the content and author, and for not adequately considering the purpose and social context of the writing. The process method is widely acknowledged and applied since it enables students to comprehend the writing procedures and acknowledges that learners' existing knowledge helps to writing ability development.

1.2.1.3 The Genre Approach. During the 1980s, the genre method gained popularity, suggesting that student writers may improve by analyzing various written materials. Nunan (1999) stated that many types of writing are characterized by a certain structure and grammatical patterns that mirror the intended communication of the genre.

Cope and Kalantzis (1993) proposed a three-phase genre method to writing: (1) modeling the goal genre for students, (2) collaboratively constructing a text with the instructor and students, and (3) having each student independently write a text. Badge and White (2000) provide a method that recognizes writing as a social activity with a specific goal. They suggest that learning can occur

through conscious imitation and analysis, which supports explicit teaching. Critics argue that the genre approach underestimates the processes involved in text production and views learners as predominantly passive.

The genre method effectively demonstrates to pupils that various discourses necessitate distinct structures. Moreover, including genuine texts increases student engagement and adds importance to the writing process (Khaldoun & Abdel Kader, 2008).

1.2.1.4 The process genre approach. Is a method of teaching writing that emphasizes the understanding and analysis of different text genres, as well as the recursive nature of the writing process (Badger & White, 2000). This approach recognizes that different genres, such as narratives, reports, or arguments, have distinct conventions and features that students need to master in order to produce effective texts for various purposes and contexts (Hyland, 2007).

One of the key principles of the process genre approach is genre awareness, where students are taught to recognize and analyze the distinctive features and conventions of different genres, including their purpose, audience, structure, language features, and overall organization (Paltridge, 2001). Teachers often provide model texts that exemplify the target genre, allowing students to deconstruct and analyze the genre's characteristics (Hyland, 2007). Through explicit instruction, teachers guide students in understanding the features and conventions of the target genre, such as its purpose, structure, language features, and organizational patterns (Badger & White, 2000).

The process genre approach also emphasizes joint construction, where teachers and students collaborate to construct a text in the target genre, with the teacher providing guidance and scaffolding throughout the process (Hyland, 2007). This collaborative approach allows students to apply their understanding of the genre while receiving feedback and support (Paltridge, 2001). Additionally, students are given opportunities for independent construction, where they produce

texts independently in the target genre, applying their knowledge of the genre conventions and the writing process (Badger & White, 2000).

Throughout the process genre approach, the recursive nature of writing is emphasized, where students engage in multiple drafts, revisions, and editing cycles (Hyland, 2007). This recursive process helps students develop their writing skills, receive feedback, and refine their understanding of the genre conventions (Paltridge, 2001). By integrating genre awareness, explicit instruction, joint construction, independent construction, and the recursive writing process, the process genre approach aims to equip students with the skills and knowledge necessary to produce effective texts in various genres and contexts (Badger & White, 2000).

1.2.2 Challenges Faced by EFL Learners in Writing

The complexity of writing pertains to the obstacles faced by learners in mastering one or more components of the writing skill. These issues may involve the utilization of verb tenses, nouns, or spelling mistakes. Raimes (1983, as cited in Khasawneh, 2023) asserts that writing is considered a difficult endeavor due to its incorporation of several language elements including syntax, lexicon, spelling, and punctuation. Spelling is identified as one of the most difficult aspects of writing by learners in prior studies. Students who struggle to spell words are more inclined to create substandard written work (Jayousi, 2011, as cited in Khasawneh, 2023) .

English language learners view vocabulary as the fundamental component of any language. Nevertheless, students have challenges in choosing the right phrase while composing a paragraph or an essay (Al-Zahrani, 2011, as cited in Khasawneh, 2023). Ra'uf (2020, as cited in Khasawneh, 2023) contends that the majority of EFL learners struggle with English language communication due to their restricted vocabulary. A limited vocabulary hinders learners from effectively articulating their ideas and views on a certain subject. Murray and Hughes (2008, as cited in

Khasawneh, 2023) suggest that mastering punctuation can be challenging due to the significant amount of practice required.

Research on writing challenges has identified many factors for these issues. The factors were the writing process, lack of enthusiasm, limited learning time, lack of practice, and bad comments from teachers. Alfalki (2015, as cited in Khasawneh, 2023) states that writing is a difficult process that requires pupils to excel in grammar, critical thinking, and judgment. Al-Khairy (2013, as cited in Khasawneh, 2023) endorsed the earlier notion and identified common issues faced by students throughout the writing process, such as grammatical errors, poor word selection, spelling mistakes, and punctuation errors.
Another contributing element to writing issues among students is a lack of drive.

Silva (1997, as cited in Khasawneh, 2023) stressed the need of engaging and encouraging pupils to write on various subjects. Students may become disinterested when tasked with writing about unexpected subjects. Zamel (1985, as cited in Khasawneh, 2023) contended that students should have the autonomy to choose the subject they want to write about. By doing this, the teacher enhances writing productivity and contributes to improving writing quality. Guantum and Chakraverty (2002, as cited in Khasawneh, 2023) highlighted the significance of the time element in predicting the development of writing abilities. They stated that acquiring and perfecting writing abilities require a significant amount of time.

Hedge (1988, as cited in Khasawneh, 2023) stated that students frequently miss writing task deadlines because they do not have enough time. He said that the absence of progress was necessary in order to think, organize ideas, draft, and review the text.

Learning writing abilities requires practice due to the significant role of practice in mastering linguistic skills. Alkhairy (2013, as cited in Khasawneh, 2023) emphasized that acquiring writing abilities is a gradual process that requires dedication and practice. Increased

practice leads to improved mastery of abilities among pupils. They also demonstrated the significant impact of teacher input on enhancing students' writing output. He said that contradictory comments from professors might result in a decrease in students' confidence in their work. Zamel (1985, as cited in Khasawneh, 2023) stated that certain pupils can become irritated due to the ambiguous feedback given by their teachers.

1.2.3 Strategies to Enhance EFL Writing Skills

Acquiring the talent of writing might be challenging, but there are key factors that assist EFL/ESL learners in improving their writing abilities. One of these factors is genre, which represents the conventions of different forms of writing. Genre in English writing denotes a certain style or category of writing. Genre assists readers in identifying the category of a work, such as scientific, advertisement, biography, romance fiction, formal letter, or poetry (Rao, 2017). Before instructing EFL/ESL learners in a certain genre, teachers must first display exemplar works of that genre in their lessons. Subsequently, the learners grasp the skills required for composing a specific genre and endeavor to use them independently (Rao, 2017).

When teachers aim to instruct a certain genre to their EFL/ESL learners, they must first display some exemplary works of that genre in their classes (Rao, 2017). Subsequently, the learners grasp the skills required for composing the specific genre and endeavor to use them independently. When teachers provide thorough instruction to students on writing within a specific genre and offer relevant exercises for practice, the students enhance their writing abilities in that particular style of text. Furthermore, teachers should guide students on writing techniques and topics, allowing them to develop their writing skills freely and independently (Rao, 2017).

Teachers should use group or pair work in their lessons to enhance the development of their EFL/ESL pupils (Rao, 2017). Learners strive to contribute more and achieve positive results while

working in groups or pairs. It is also more convenient for teachers to support pupils when they require assistance. Learners strive to complete the assigned task quickly and with high precision when working in groups or pairs. Teachers should choose writing themes based on the proficiency level and preferences of EFL/ESL students. As a result, the learners focus more on the assigned task and create high-quality work with support and collaboration from their peers. (Rao, 2017)

According to Rao (2017) another crucial element in enhancing EFL/ESL learners' writing skills is using collaborative or cooperative work in the classroom. The primary principle behind collaborative or cooperative work is to enable learners to complete a job in groups by sharing their thoughts with each other. EFL/ESL learners can efficiently complete the writing work through active involvement in this learning environment. Some learners undoubtedly excel when tasks are assigned individually. However, in collaborative or cooperative classrooms, the writing process occurs in groups and encourages detailed and critical criticism. Harmer (2007) says that it is beneficial for students to write in groups since it motivates them to enhance their writing skills, whether in long or short process. English teachers should consistently motivate learners to cultivate positive relationships with group members to effectively complete assigned work.

A more appropriate strategy to apply in EFL/ESL courses is creative writing (Rao, 2017). The EFL/ESL learners may create high-quality writing by utilizing their creativity, which serves as the primary foundation for crafting stories, poems, and dramas. When writing is more imaginative, people are more interested in reading it. Ur (1996) states that the majority of individuals take pleasure in their job and desire for it to be acknowledged. Readers tend to focus more on imaginative and creative writings compared to other types of written works. Creative writing is a process of self-discovery that encourages efficient and engaged learning. EFL/ESL learners focus on creative writing subjects to improve their language skills beyond their everyday use in classroom assignments.

Another method for training EFL/ESL learners is through brainstorming. Brainstorming is primarily utilized in EFL/ESL courses at the beginning of writing tasks (Rao, 2017). The teachers assign certain subjects to the learners and instruct them to complete the tasks. Before the learners begin their work, the teacher facilitates discussions to develop new ideas, solutions, and key points. Students are invited to provide ideas pertaining to the subject. This approach involves a group exercise where EFL/ESL learners spontaneously submit ideas to generate a list of solutions for a particular topic. During a brainstorming session, learners freely share their ideas without fear of criticism. Many EFL/ESL learners are inspired to write assignments when provided with essential points relating to the task (Rao, 2017).

It is well acknowledged that writing is a crucial ability that English teachers should effectively cultivate in EFL/ESL pupils. Therefore, English teachers should inspire their students to embrace strong writing abilities. Teachers should motivate students in their EFL/ESL classes by utilizing a variety of strategies, methods, and approaches (Rao, 2017).

Highly motivated learners actively engage in assignments with passion and strive to deliver high-quality results. When choosing assignment themes, teachers should take into account the learners' interests and requirements to ensure they engage with enthusiasm in a pleasant and supportive setting (Rao, 2017).

English teachers should also comprehend the typical challenges that pupils have when writing. Teachers should provide guidance to learners on how to articulate ideas and structure the assigned writing job. Teachers should instruct learners in the writing process, which requires breaking down the action into many stages, each involving specific sub-skills. Hence, teachers should effectively lead learners to engage in activities with high levels of motivation and encouragement (Rao, 2017).

English teachers should comprehend the cognitive abilities of EFL/ESL learners and implement cutting-edge ELT methods to enhance their writing proficiency. EFL/ESL teachers should focus on improving their students' writing abilities through a range of exercises, as writing is often the most challenging ability for learners to develop. Thus, teachers should address the interests and requirements of EFL/ESL learners to enhance their engagement in writing tasks. Furthermore, EFL/ESL learners engage actively in activities and demonstrate high-quality and effective outcomes in their English writing abilities (Rao, 2017).

1.2.4 Previous Research on AI Chatbots and EFL Writing Skills

1.2.4.1 In Broader Context. AI chatbots are emerging as powerful tools in the field of EFL writing. Kwon et al. (2023) studied the impact of using a chatbot as a writing practice tool for second language learners. The researchers developed a chatbot system that provided controlled scenario-based dialogues focusing on key expressions learned in class. Participants engaged with the chatbot to practice writing tasks related to descriptions of appearances, leisure activities, giving directions, types of jobs, and future vacation plans. The study found that students who utilized the chatbot for writing exercises exhibited significantly better performance in posttests compared to those who received traditional teacher-led instruction. Additionally, participants in the experimental group reported positive perceptions of the chatbot, indicating its usefulness in improving their writing skills and enhancing their comfort levels when learning a foreign language. These results underscore the potential of chatbots as effective tools for facilitating language learning and enhancing writing proficiency in second language learners.

In the study of Harunasari (2023), the aim was to examine the effectiveness of integrating ChatGPT, an AI tool, into an EFL writing class. The researcher utilized ChatGPT as an assisting tool for 16 undergraduate EFL students to write a short story, assessing their feedback on the

integration. The findings revealed that while 56.25% of students supported the use of ChatGPT for its efficiency in generating ideas, technical difficulties and concerns about overreliance on AI were also noted. Some students faced challenges due to lack of familiarity with ChatGPT, impacting their interactions with the tool. The study suggests the need for responsible use of AI tools in the classroom, emphasizing the importance of training, policies, and awareness of academic integrity to maximize the benefits of integrating ChatGPT into EFL writing classes.

Zakaria and Ningrum (2023) in their study delved into investigating the impact of ChatGPT in EFL writing, focusing on its capabilities, drawbacks, impacts, and strategies for overcoming challenges. The researcher employed a descriptive qualitative research design using a literature review method to gather and analyze existing scholarly literature on ChatGPT's influence on EFL writing. The findings highlighted ChatGPT's strengths in text summarization, personalized interactions, and its potential to enhance language learning and instruction. However, the study also identified potential biases in AI systems and emphasized the importance of L2 learners being aware of data collection and usage policies. Overall, the research underscored the significant role of AI, particularly ChatGPT, in revolutionizing EFL writing practices while emphasizing the need for learners to understand the implications of using such technology.

Nisak and Ishlahiyah (2023) aimed in their study to investigate the impact of using AI chatbots to enhance writing skills among English literature students. The research utilized AI chatbots as a tool to assist students in improving their writing abilities in the field of English literature. The findings suggest that AI chatbots can effectively support students in developing their writing skills by providing feedback, guidance, and practice opportunities. This study contributes to the understanding of how technology, specifically AI chatbots, can be utilized to enhance writing instruction in the context of English literature.

1.2.4.2 In the Algerian Context. The closest we could find in the Algerian context is Ishak (2023). who studied an AI-powered writing assistant, which is Grammarly

Ishak (2023) delved in his study into the correlation between Algerian EFL learners' utilization of Grammarly and their academic writing proficiency. The research, conducted at Mohammed Khider University of Biskra, aims to assess the impact of Grammarly on enhancing writing skills among EFL students. Ishak employed an online questionnaire and a writing test as tools to gather data from participants. The findings reveal that Grammarly is widely embraced by students, with a significant reliance on its features for improving writing quality and grammatical accuracy. The study underscores the positive influence of Grammarly on the writing abilities of Algerian EFL learners, emphasizing its role in enhancing their overall academic writing performance.

1.2.5 Criticisms and Concerns Over AI ChatBot Use

Although AI offers several advantages for EFL teaching and learning, it is crucial to acknowledge the potential drawbacks. Scholars have recently identified shortcomings in the application of AI in education (Bécue et al., 2021). AI tools for education are in the early stages of research and have limits, as they are not completely accurate. For instance, grammar-checkers may miss certain errors, and machine translations may also make mistakes. Huang (2020) asserts that there are still many unexplored paths ahead. The disparity between theory and practice must be gradually reduced.

Many researchers, including Kim (2017, 2019), suggest that these shortcomings are advantageous for EFL learners. This is because they are required to invest additional effort in reviewing the outputs of AI tools, which makes them more active, motivated, and engaged. Consequently, they learn more, enhance their critical thinking skills, and avoid becoming overly

reliant on AI tools. Furthermore, despite these shortcomings, students and researchers might utilize sophisticated AI tools to carry out tasks on their behalf and engage in academic dishonesty, sparking debates on the ethical application of AI in education (Conversation, 2021, as cited in Aliouche & Mezghich, 2022).

AI is raising concerns regarding data safety as it conflicts with the aim of creating transparent systems and jeopardizes the privacy of learners and teachers by utilizing large datasets without permission, which is deemed a significant breach of copyright and privacy (Mounia & Douaa, 2022).

Xue (2021) states that AI provides more choices and enhances the learning/teaching environment, but also brings new problems and requirements to education. Almaiah et al. (2020) ascribe these issues to a deficiency of technical assistance within educational sectors. Abalkheel (2022, as cited in Mounia & Douaa, 2022) states that a lack of knowledge, training, and competence has hindered the educational workforce, including teachers, students, administrative personnel, decision-makers, and curriculum developers. Consequently, comprehensive technological maintenance remains a challenge for several institutions and schools according to Almaiah et al. (2020).

Abalkheel (2022, as cited in Mounia & Douaa, 2022) studied the difficulties faced by Saudi EFL teachers and students during the COVID-19 pandemic. The research identified issues like virtual teaching, technology access, time management, preparedness, fairness, cognitive constraints, and self-confidence. Organizational support, professional development, and continuous technical training for EFL instructors and students are crucial for successful AI integration in the educational sector (Lily et al., 2020; Alkinani, 2021). Almaleki (2021, as cited in Mounia & Douaa, 2022) emphasizes the need of acknowledging that AI is a valuable technology for teaching and learning languages.

Furthermore, there are worries about the roles and replacement of teachers, as well as the potential loss of human values (Underwood, 2017; Underwood & Luckin, 2011). The apprehension of robots displacing employment and negatively affecting the language learning industry has also increased (Kannan & Munday, 2018). Instructors' aversion to change and decreased preparation of teachers and pupils were caused by these reasons, as stated by Unesco in 2019. The impact of AI on human work is undeniable. However, AI should not be viewed as a danger to humans but rather as a helpful tool (Kannan & Munday, 2018).

To address the integration of AI in the educational sector, particularly in EFL teaching and learning, it is essential to establish specific principles to govern the development and control of AI, in conjunction with policies and protective measures (Huang, 2020). Experts are still searching for an effective paradigm for integrating AI into education (Ciolacu et al., 2019). Using AI in a haphazard manner may result in failure rather than success (Abalkheel, 2022, as cited in Mounia & Douaa, 2022). However, there is a lack of research demonstrating the effective application of AI in education (Bécue et al., 2021). Nevertheless, the benefits of utilizing AI in language instruction outweigh the drawbacks, particularly when establishing guidelines for certain applications (Abalkheel, 2022; Almaleki, 2021; Huang, 2020, as cited in Mounia & Douaa, 2022).

1.3 Self-Directed Learning in EFL Writing.

1.3.1 Definition and Conceptualization

Various definitions exist regarding SDL. Knowles (1975, p. 18) defined SDL as, "A process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes".

Garrison (1997) defines SDL as the process in which students integrate external management, internal monitoring, and motivating elements related to learning within an educational setting.

Hiemstra (1994) and Brookfield (1986) described SDL as a process where learners take on the responsibility of planning, implementing, and assessing their own learning. They are expected to work individually or collaboratively with others to attain predetermined learning objectives.

1.3.2 Characteristics of SDL

The notion of SDL simply means taking charge of your own learning. First introduced by Malcolm Knowles in 1975, and it gained popularity due to its perceived superiority over teacher-directed learning in facilitating adult learning (Knowles, 1975). SDL makes students more interested in learning and helps them remember and use what they learn. It also prepares them to be lifelong learners, which is important because knowledge is always growing and changing (Greveson & Spencer, 2005; Kar et al., 2014; Loyens et al., 2008, as cited in Alradini et al., 2022).

Additionally. SDL is characterized by self-initiation, personalization, and intentionality in learning. It entails setting personal objectives, making use of different resources, and taking personal responsibility for learning. SDL only works if learners have certain qualities, like self-confidence, curiosity, and the ability to think critically and make decisions (Kindy et al., 2018, as cited in Alradini et al., 2022) . Self-directed learning readiness (SDLR) depends on how much they have these qualities(Gould et al., 2015, as cited in Alradini et al., 2022). Some people need a lot of help from teachers, while others can learn completely on their own.

Knowing how ready students are for SDL can help teachers plan their lessons. It can show what students are good at and where they need help, so teachers can focus on the right things. It

can also help teachers choose the best teaching methods and design the best curriculum for their students (Alradini et al., 2022).

Besides that, SDL has caused confusion since numerous related terms are frequently used interchangeably or similarly during its development. Hiemstra (1994) categorizes SDL as self-planned learning, learning projects, self-education, self-teaching, autonomous learning, autodidaxy, independent study, and open learning. Although these terms have different terminology, they are discreetly interconnected or associated with SDL. SDL does not require traditional classroom structures, formal assessments, instructors, group work, or grading systems, but it does not necessarily exclude formal educational environments.

1.3.3 Theoretical Models and Frameworks

Various viewpoints in the field of SDL give rise to multiple models of SDL that contain numerous dimensions. The theory of SDL is derived from the theory of active learning. Active learning refers to any approach that involves students in the process of learning. Active learning necessitates students to engage in meaningful learning activities and reflect upon their actions. The term commonly used to refer to this process is metacognition. The students' self-awareness of their learning process serves as a motivation for them to discover more effective techniques of learning over time. SDL places the primary responsibility for the learning process on the individual student, however the instructional method also contributes to the learning experience (Brockett & Hiemstra, 2020, as cited in Bhat & Dahal, 2023).

It is a learning process in which the internal elements of the learners are crucial. The internal qualities the student include self-discipline, a passion for reading, and curiosity (Guglielmino, 2013, as cited in Bhat & Dahal, 2023). In order to derive the utmost advantages from SDL,

individuals must possess the necessary skills to establish learning goals, devise a learning strategy, and employ motivational methods (Du Toit-Brits & Van Zyl, 2017, as cited in Bhat & Dahal, 2023).

The research conducted by Khiat (2015, as cited in Mahamit & Sriwichai, 2023) and Williams and Brown (2013, as cited in Mahamit & Sriwichai, 2023) examined the methodology employed to assess the SDL abilities of students. They discovered that there was no optimal model for evaluating students SDL abilities. The model utilized should be suitable for the student's specific needs or context.

1.3.3.1 The Personal Responsibility Orientation Model (PRO). Brockett and Hiemstra (1991, as cited in Mahamit & Sriwichai, 2023) examined SDL as both an educational approach and a collection of personality traits. The instructional method encompasses the responsibilities of analyzing needs, acquiring learning resources, implementing learning activities, and evaluating learning. personality traits encompass self-perception, preparedness for independent decision-making, the influence of experiences, and preferred methods of acquiring knowledge. The approach incorporates social background as well.

1.3.3.2 Self-Directed Learning Readiness. Guglielmino (1977, as cited in Mahamit & Sriwichai, 2023) identified eight criteria for assessing students' preparedness, which include the desire to learn, self-perception as an active learner, ability to take initiative and learn independently, willingness to take responsibility, enthusiasm for learning, creativity, positive direction to the future, and proficiency in problem-solving and study skills.

1.3.3.3 Garrison's Model. Song and Hill (2007, as cited in Mahamit & Sriwichai, 2023) asserted that Garrison's model of SDL encompasses both the viewpoints of SDL as an individual characteristic and a method of acquiring knowledge. Garrison (1997, as cited in Mahamit & Sriwichai, 2023) outlines three components in Garrison's Model: self-management, self-monitoring, and motivation.

1.3.3.4 Gibbons's Self-Directed Learning. According to Gibbons (2003, as cited in Mahamit & Sriwichai, 2023), learners will demonstrate SDL when they possess five dimensions: 1) Learners exert maximum control over the learning process, 2) Development of skills, 3) Encouraging students to push themselves to achieve their highest potential, 4) Student self-regulation, and 5) Self-motivation and self-evaluation.

1.3.3.5 Williamson's Model. Williamson (2007, as cited in Mahamit & Sriwichai, 2023) assessed SDL using five dimensions: awareness, learning techniques, learning activities, evaluation, and communication skills.

1.3.3.6 Grow's Staged Self-Directed Learning Model. In 1991, Grow introduced a SDL paradigm for educators to facilitate the development of SDL in their classrooms. The model proposed by Grow (1991, as cited in Bergamin et al., 2019) consists of four stages, which are influenced by four distinct leadership styles. In this paradigm, the educator's objective is to align the student's level of self-direction and provide them with the necessary skills to go to more advanced levels (Grow, 1991, as cited in Bergamin et al., 2019).

Each SDL model included two components: the instructional process and a collection of personal traits. The instructional process encompassed the analysis of needs, planning, the search for learning resources, the implementation of learning activities, self-monitoring, and evaluation. Furthermore, self-concept, creativity, and motivation are included within a collection of individual traits (Mahamit & Sriwichai, 2023).

1.3.4 Measuring Self-Directed Learning

In recent decades, several tools have been created and utilized to assess students' SDL. While Most of these tools was created or used for nursing and medical students . It can also be applied in other domains like EFL . But certain modifications should be done. One of the reasons

behind that is because SDL readiness is domain-specific and can vary depending on the learner's existing knowledge and skills in the particular subject area (Sakraoui, 2020).

1.3.4.1 The Self-directed Learning Instrument (SDLI). Is one of the tools used for measuring SDL . SDLI is a self-report tool specifically designed to assess the SDL abilities of nursing students (Cheng et al., 2010, as cited in Shen et al., 2014). The SDLI consists of 20 items divided into four domains: learning motivation (LM, 6 things), planning and implementing (PI, 6 items), self-monitoring (SM, 4 items), and interpersonal communication (IC, 4 items). All items in SDLI are explicitly expressed in a positive manner. The participant is requested to evaluate each topic using a 5-point Likert scale, where 1 represents "strongly disagree" and 5 represents "strongly agree". Hence, the potential maximum score on the SDLI varies between 20 and 100. A greater score signifies a greater degree of SDL (Cheng et al., 2010, as cited in Shen et al., 2014).

1.3.4.2 The Self-Rating Scale of Self-Directed Learning (SRSSDL). The SRSSDL is a tool used to measure an individual's level of SDL. The SRSSDL was designed by Williamson SN and validated in 2007 (Williamson, 2007, as cited in Shen et al., 2014). The SRSSDL consists of 60 items divided into five subscales: Awareness (12 items), Learning methods (12 items), Learning activities (12 items), Evaluation (12 items), and Interpersonal skills (12 items). The responses for each topic are evaluated using a five-point Likert scale, where 5 represents "always," 4 represents "often," 3 represents "sometimes," 2 represents "seldom," and 1 represents "never." All items are explicitly expressed, with a greater overall score indicating a higher level of SDL. SRSSDL has been identified as a highly useful measure for self-assessment of SDL (Williamson, 2007, as cited in Shen et al., 2014)

1.3.4.3 The Self-Directed Learning Readiness Scale (SDLRS). Is one of the most known and used tools for measuring SDLR. SDLRS is a tool designed to assess how prepared an individual is to engage in SDL. This type of learning is characterized by taking initiative, being independent

and persistent, and accepting responsibility for one's own learning process (Guglielmino, 1977, as cited in Hoban et al., 2005). The SDLRS consists of 58 items that measure various qualities associated with SDL, such as curiosity, self-confidence in learning abilities, and the ability to use basic study skills. However, the scale has received some criticism for potentially not fully capturing the complexity of SDLR and lacking a strong theoretical foundation (Hoban et al., 2005).

Sakraoui (2020) in his study employed a modified version of the SDLRS originally developed by Fisher and other scholars in 2001, To assess students' readiness for SDL. Several adaptations were made to the original SDLRS to ensure its suitability for the specific research context and objectives. This included omitting and modifying certain items to align with the domain of EFL learning.

The adapted SDLRS used in Sakraoui's (2020) study comprised 13 items, measured on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). These items were grouped into three subscales. Self-management, Desire for learning and Self-control

Olivier (2019) conducted a study aimed at developing a SDW questionnaire to explore the concept of autonomography (SDW) among Afrikaans-speaking university students in South Africa. Drawing from literature on SDL, self-regulated learning, and learner autonomy in language learning, a 30-item SDW self-rating scale was developed covering aspects like self-directedness, writer's voice, self-assessment, language preferences, metacognitive skills, and writing on computers (Olivier, 2019).

The questionnaire was administered to 175 Afrikaans-speaking student-teachers, and statistical analyses confirmed its reliability and validity in measuring factors such as self-directedness, writer's voice and self-involvement, self-assessment and problem-solving, preference for expressive language, sensitivity towards other languages, metacognitive skills, SDW on computer, and editing and problem-solving on computer (Olivier, 2019). Participants tended to be

more positive towards self-directedness, voice, expressive language, metacognitive skills, and computer use for writing/editing, with those preferring creative writing scoring higher on self-directedness, voice, and expressive language, while those preferring functional writing scored higher on computer use (Olivier, 2019).

The identified factors provide measures and key areas for development in writing instruction, allowing diagnosis of individual and class-wide trends to inform teaching practices (Olivier, 2019).

1.3.5 Self-Directed Learning in the Context of EFL Writing

Writing is considered a vital aspect of language proficiency. SDL has emerged as a promising approach for improving EFL writing skills. SDL empowers learners to take ownership of their learning process, leading to significant improvements in writing achievement (Aghayani & Janfeshan, 2020).

To effectively implement SDL in EFL writing instruction, educators should provide opportunities for students to practice self-direction, including setting goals, identifying resources, selecting appropriate learning activities, and evaluating their own progress. By gradually shifting responsibility from teacher to learner, educators can create a supportive environment that fosters SDL and ultimately leads to improved writing outcomes for EFL learners (Aghayani & Janfeshan, 2020).

Challenges arise while teaching writing to EFL learners. Therefore, it should not be assumed that the responsibility for the success of EFL students in writing lies only with the instructor. Students need to be able to autonomously take on the responsibility of guiding their own learning in the field of writing. Thus, the ability to participate in SDL is essential, especially for students learning ESL, to improve their writing abilities. In higher education, writing abilities are

considered valuable since students use them to articulate their opinions (Sabarun et al., 2023). Students should acquire writing abilities through self-directed study.

The research of Rojas Rivera & León Pinilla (2017) investigated the effectiveness of SDL strategies in improving the creative writing skills of ELT undergraduate students. Using a blog platform, students engaged in various activities that encouraged them to take control of their learning process. Key SDL strategies included planning, mapping, brainstorming, goal setting, contextualizing, resourcing, and cooperating. These techniques helped students organize their thoughts, generate ideas, and structure their writing effectively.

Through the application of SDL strategies, students demonstrated a notable improvement in their creative writing products. Their final texts exhibited better organization, clarity, and depth compared to their initial baseline writing samples. Moreover, students reported feeling more confident and motivated in their writing abilities. The research highlighted the importance of planning and mapping as the most frequently used strategies, while brainstorming and resourcing helped students develop creative ideas and enrich their vocabulary (Rojas Rivera & León Pinilla, 2017).

Overall, the study suggests that SDL strategies can be valuable tools for fostering writing skills in EFL learners. By promoting autonomy, reflection, and strategic learning, these strategies empower students to become more effective and creative writers. This approach not only enhances their writing skills but also equips them with valuable skills for lifelong learning and professional development (Rojas Rivera & León Pinilla, 2017).

1.3.6 Self-Directed Learning and Language Proficiency

Recent research highlights the significant benefits of SDL for language acquisition. Several studies have demonstrated its effectiveness in improving language proficiency across various skills.

Li and Park (2019, as cited in Cuong, 2023) established a connection between L2 learning experiences and English proficiency, while Wichadee (2011, as cited in Cuong, 2023) found that SDL significantly improved English reading proficiency in a 12-week study. Further supporting this, Li et al. (2021, as cited in Cuong, 2023) discovered that students with strong SDL skills achieved better reading outcomes, completing more books and reading more frequently.

SDL's positive impact extends to speaking skills as well. Majedi and Pishkar (2016, as cited in Cuong, 2023) observed that participants in an 8-week SDL program demonstrated superior speaking accuracy compared to a control group. Additionally, Buitrago (2017, as cited in Cuong, 2023) found that incorporating self-directed and collaborative speaking activities into weekly classes enhanced students' oral fluency.

Also SDL offers numerous advantages for improving the writing skills of EFL learners and enhancing the writing capacity of EFL university students (Akmilia et al., 2015; Sriwichai & Inpin, 2019, as cited in Mahamit & Sriwichai, 2023).

Research by Aghayani and Janfeshan (2020) suggests that SDL leads to significant improvements in writing achievement. In their study, pre-intermediate and intermediate EFL learners who engaged in SDL activities, such as setting goals, choosing tasks based on their interests, and self-evaluating their progress, outperformed those who received traditional instruction. These findings align with previous research highlighting the benefits of SDL for EFL writing (e.g., Akmilia et al., 2017; Olivier, 2016). By fostering learner autonomy and metacognitive skills, SDL enables EFL learners to become more effective and independent writers.

These findings collectively underscore the potential of SDL as a valuable tool for enhancing language learning across various skills and proficiency levels.

1.3.7 AI and Self-Directed Learning

The potential of AI and AI chatbots to contribute to SDL in EFL writing is a subject of ongoing discussion. While these tools offer promising benefits, certain drawbacks and ethical considerations require careful attention (Lashari & Umrani, 2023).

AI chatbots have been increasingly integrated into educational settings to enhance SDL. Studies have shown that AI chatbots can improve students' learning outcomes by enhancing self-efficacy and motivation (Wu & Yu, 2023; Jia-qi et al., 2020). The use of AI chatbots in educational programs has been found to reduce stress levels among learners and promote repeated learning, thereby positively impacting SDL (Han et al., 2022). Additionally, AI chatbots can contribute significantly to the educational field by serving as instructional tools to assist students in independent online learning (Neo et al., 2022).

The personalized nature of AI chatbots allows for tailored interactions that can support SDL by providing individualized feedback, facilitating group discussions, and enhancing student engagement and motivation (Baskara, 2023). Furthermore, the use of AI chatbots as learning assistants has been proposed to improve students' online learning experiences, especially in the context of the new normal in education (Neo, 2022).

AI chatbots leverage advanced technologies such as natural language processing, machine learning, and deep learning to provide human-like interactions and responses (Kohnke et al., 2023). These technologies enable chatbots to analyze user inquiries and respond based on vast datasets, enhancing the quality of interactions and learning experiences (Kohnke et al., 2023; Lee et al., 2021). Moreover, the ability of AI chatbots to learn and improve over time through user interactions contributes to their effectiveness in supporting SDL (Gkinko & Elbanna, 2022).

Another significant contribution of AI chatbots is their ability to provide learners with consistent and personalized linguistic input. This includes offering vocabulary suggestions,

generating diverse expressions, and providing immediate feedback on errors (Barrot, 2023; Huang et al., 2022, as cited in Lashari & Umrani, 2023). Such features can be particularly helpful for self-directed learners who may not have regular access to native speakers or teachers for guidance and feedback (Lashari & Umrani, 2023).

Additionally, chatbots are accessible 24/7, allowing learners to practice and receive feedback at their own pace and convenience (Haristiani, 2019; Winkler & Soellner, 2018, as cited in Lashari & Umrani, 2023). This flexibility is crucial for SDL, where learners manage their own time and learning strategies (Lashari & Umrani, 2023).

Furthermore, AI models like ChatGPT can adapt the difficulty level and provide personalized learning resources based on individual learner needs and progress (Kuhail et al., 2023, as cited in Lashari & Umrani, 2023). This can help self-directed learners stay engaged and challenged, optimizing their learning experience (Lashari & Umrani, 2023). Another advantage is the ability of ChatGPT to generate various text formats, including essays, emails, narratives, and quizzes, providing learners with diverse writing practice opportunities (Lametti, 2022; Wen & Wang, 2023, as cited in Lashari & Umrani, 2023). This can be valuable for self-directed learners who need to practice different writing styles and genres (Lashari & Umrani, 2023).

While offering benefits in educational settings, AI chatbots can also have negative effects on SDL. Research has indicated that poorly designed and organized chatbots may not be effective in supporting learning (Fidan & Gencel, 2022). Additionally, there is a lack of comprehensive research analyzing the potential negative impacts of AI chatbots on students' learning outcomes (Wu & Yu, 2023). Which suggest that the design and implementation of AI chatbots in educational contexts need to be carefully considered to avoid hindering SDL processes.

The ease of using ChatGPT to generate text raises concerns about academic dishonesty, with students potentially using it to complete assignments without actual learning (Cassidy, 2023;

Reich, 2022, as cited in Lashari & Umrani, 2023). This can undermine the integrity of SDL and assessment (Lashari & Umrani, 2023).

Additionally, ChatGPT's responses are based on its training data, which may contain biases and inaccuracies (Barrot, 2023; Ray, 2023). This can lead to learners receiving incorrect information or developing skewed perspectives (Lashari & Umrani, 2023). Moreover, overreliance on AI-generated content can hinder the development of critical thinking and creativity in writing (Varanasi, 2023, as cited in Lashari & Umrani, 2023). Self-directed learners need to develop their own ideas and writing styles, which might be stifled by relying on AI-generated text (Lashari & Umrani, 2023).

Finally, data privacy and security are concerns when using AI tools like ChatGPT, especially regarding collecting data from children (Pons, 2023, as cited in Lashari & Umrani, 2023). Self-directed learners need to be aware of these concerns and use AI tools responsibly (Lashari & Umrani, 2023).

In conclusion, while AI and AI chatbots like ChatGPT offer promising possibilities for self-directed EFL writing, careful consideration of the potential drawbacks and ethical implications is crucial (Lashari & Umrani, 2023). Educators and learners need to work together to develop strategies that utilize the benefits of AI while mitigating the risks and ensuring academic integrity and authentic learning (Lashari & Umrani, 2023).

1.3.8 Individual Differences and Self-Directed Learning

There is no relevant studies in literature that focused on how individual differences (such as gender, age, etc) affect the relationship between Ai, SDL and EFL writing. The closest thing is some studies that explored the relation between individual differences and SDL readiness.

The recent findings on SDL readiness have been inconsistent (McCauley & Hezlett, 2001, as cited in Reio & Davis, 2005). Reio (2004, as cited in Reio & Davis, 2005) conducted a study to examine the impact of prior knowledge, SDL readiness, and curiosity on classroom learning performance. The study found that there were variations in SDL readiness among individuals. Specifically, being older, male, and Caucasian were factors that predicted higher levels of SDL readiness and better classroom learning performance. In contrast, Yoo et al. (2000, as cited in Reio & Davis, 2005) discovered that the younger participants in their study on continuing education adults exhibited the highest level of SDL preparedness when using a Korean version of the SDLRS.

Guglielmino et al. (1996, as cited in Reio & Davis, 2005) conducted a study comparing Chinese and American scores on the SDLRS using both Chinese and English language versions of the measure. The results showed that Chinese scores were lower. No information regarding age and gender differences was provided. In addition, Hoban and Sersland (2000, as cited in Reio & Davis, 2005) discovered that older students from two university samples exhibited higher scores on the SDLRS. However, no gender differences were seen.

In a study conducted by Bulik (1996, as cited in Reio & Davis, 2005) on 12th grade students with exceptional educational needs, it was found that there were no significant differences in SDLRS scores between males with exceptional needs and their non-handicapped peers. However, females with exceptional needs had significantly lower scores compared to their non-handicapped peers.

Karaoğlu and Pepe (2020) investigated the SDLR of pre-service physical education and sports teachers, exploring how it varied based on gender, age, grade level, weekly study hours, and GPA. While no significant difference was found between genders, other factors did show an impact. SDLR increased with age, with older students demonstrating higher readiness. Second-year students displayed the highest SDLR compared to other years. Additionally, SDLR was

positively correlated with both weekly study hours and GPA, indicating that students who invest more time in their studies and achieve higher academic performance tend to be more prepared for SDL. These findings suggest that fostering SDL skills in pre-service teachers can be influenced by various factors, with academic engagement and performance playing a key role.

Reio & Davis (2005) explored age and gender differences in SDLR using SDLRS with high school, dental, and adult education students. After controlling for ethnicity, they found that individuals in their 30s, 40s, and 50s scored higher on SDLR than adolescents and young adults, suggesting a potential developmental trend where SDLR increases until the 50s for both genders. While no overall gender differences were found, females aged 14-20 had significantly higher SDLR scores than males in the same age group.

In general, there is significant evidence indicating that there are variations in SDLR across individuals based on their age, gender, and ethnicity. However, the amount of these differences and whether they interact with each other have not been adequately studied (Reio & Davis, 2005).

1.4 Gaps in the Literature

Alammar and Amin (2023) examined the use of AI paraphrasing tools by 25 female English language students at Zulfi College of Education, Majmaah University. The findings show that students generally have positive perceptions of AI paraphrasing tools, particularly in grammar usage and synonym identification. However, the study emphasizes the need to balance AI use with personal paraphrasing abilities to fully utilize technology. It also suggests further research on Arab learners' perspectives on AI paraphrasing tools.

Marghany (2023) investigated the effectiveness of using AI-based instruction, specifically Grammarly, to improve the essay writing skills of English-majoring senior students in Egypt. The study employed a mixed-method approach, using both quantitative and qualitative analysis. The

participants were 100 fourth-year students at the Department of Languages and Translation, Higher Institute for Specific Studies, Haram, equally divided into a control and an experimental group. The findings show that the experimental group, which received AI-based instruction, demonstrated better improvement in their essay writing performance compared to the control group. The study offers valuable insights for educators and researchers on the potential of using AI in language education.

Xiao and Zhi (2023) examined students' experiences and perceptions of using ChatGPT 3.5 for language learning tasks. The study involved semi-structured interviews with five students majoring in marketing, communication, translation, and data science. The findings showed that three out of five students described ChatGPT as a peer tutor providing individualized assistance and immediate feedback. The study also highlighted the importance of using effective prompts for productive outcomes and the need for further research among larger, diverse samples.

Yang et al. (2023) investigated how Chinese university-level EFL students use Pigai, an AI-programmed writing evaluation system, and respond to its feedback. Five sophomore students participated in an argumentative essay writing task outside class. The study used descriptive and exploratory methodology, analyzing students' drafts and interactions with Pigai's feedback. Results showed students respond differently to different types of feedback and their engagement evolves over time. The study offers insights for optimizing AI-programmed AWE to improve student learning outcomes.

Ginting et al. (2023) investigated the use of AI-powered writing tools for EFL college students in Medan, Sumatera Utara. The research, using a mixed-method approach, found that 50 EFL students showed a positive attitude towards AI in their assignments, highlighting its potential benefits in academic writing. The study suggests that AI-powered writing tools can significantly

enhance EFL college students' writing competencies, highlighting the potential of AI in academic writing.

Aladini (2023) examined the impact of AI applications on EFL University students' academic writing skills and logical thinking. The study used an experimental methodology and included AI programs like Grammarly, Jasper, Quillbot, Sudowrite, and Chibi. Results showed significant improvements in students' writing skills, logical thinking, and creative writing skills. The study underscored the importance of integrating AI technology in EFL University education and suggested future research directions.

AbdAlgane and Othman (2023) examined the use of AI technology in EFL classrooms in Saudi Arabia. The study involved 20 instructors and used a descriptive-analytical approach. Results showed strong agreement on the potential benefits of AI in improving language skills. However, it also highlighted the need for enhanced professional skills among educators. Factors like professor performance, collaboration, and motivation of learners also influenced the success of AI integration. The research contributes to existing literature on AI's potential for tertiary language learning.

Keerthiwansha (2018) discussed the use of Artificial Intelligence Education (AIEd) in ESL classrooms in Sri Lanka. The study was conducted using a questionnaire given to lecturers at the Department of ELT, and the findings revealed common characteristics and issues of an ESL classroom. The study employed a descriptive methodology to discuss the extent to which AI can be employed in the classroom in Sri Lanka. The results showed that AI can be used to personalize lessons for each student based on their proficiency level, and it can also help teachers manage the learning process more effectively. Overall, the study suggests that AIEd can be a valuable tool for improving the productivity of teaching in ESL classrooms in Sri Lanka.

Sumakul et al. (2022) explores the perceptions of EFL teachers regarding the integration of digital technologies and AI in language teaching. The study, conducted at a university in Indonesia, found that teachers had positive perceptions of AI's potential to enhance teaching and learning, particularly in personalized learning, student engagement, and language skills support. However, concerns were raised about the impact of AI on traditional teaching methods, the need for additional training, and potential threats to teachers' roles. The study emphasizes the importance of considering teachers' perspectives and pedagogical aspects when incorporating AI technologies in language education.

While existing literature acknowledges the potential benefits of AI tools in language education, several gaps persist. Even though studies have explored AI paraphrasing tools, automated writing evaluation systems, and AI-based instruction there is limited research on the correlation between AI usage in EFL writing and students' SDL in writing. Our study aims to address this gap by examining the relationship between AI-chatbot usage (in the context of EFL writing) and students' SDW levels. Furthermore, we explore the variables more in-depth by considering the moderating effect of student-related factors. By analyzing these potential moderating variables, we contribute valuable insights into how individual differences influence the impact of AI on writing outcomes. This is important because understanding these moderating factors can inform educators, researchers, and practitioners in improving AI integration within language education contexts.

Conclusion

The literature review has provided a comprehensive overview of the existing research on the intersection of AI chatbots, SDL, and EFL writing. It has highlighted the potential of AI chatbots as valuable tools for enhancing EFL writing skills, particularly in fostering learner

autonomy, providing personalized feedback, and facilitating language practice. The review has also emphasized the importance of SDL in language learning, empowering learners to take ownership of their learning process and develop essential skills for lifelong learning. While prior research has explored the use of AI in language learning, there is a lack of studies investigating the relationship between AI chatbot usage in EFL writing and students' SDL levels. This study aims to address this gap by examining this relationship and exploring the moderating effect of student-related factors on AI's impact on writing outcomes. By analyzing these factors, the study seeks to provide valuable insights for improving AI integration in language education.

To address these gaps and concerns, this study will adopt a mixed-methods approach, combining quantitative and qualitative data collection and analysis. The quantitative component will involve questionnaire and to measure the impact of AI chatbot usage on EFL writing skills and SDL levels. The qualitative component will include interviews and to gain deeper insights into students' perceptions, experiences, and challenges related to AI chatbot integration in EFL writing and their writing process and preferences.

Chapter 2: Fieldwork

Introduction

This chapter contains the research methodology that is used in this study, and establishes the credibility and reliability of the research findings by explaining the process used to collect, analyze, and interpret the data. This study was conducted to investigate EFL third year students' usage of AI Chatbots in their writing practices. This chapter describes the research methods, research design , the questionnaire and interview data analysis methods. The data collection techniques include the questionnaire as the quantitative primary source and an interview as a qualitative secondary sources .

2.1 Methodology

2.1.1 Research Method

  To address the research inquiries and corresponding hypotheses, the researchers employed a correlational research design. A correlational study aims to establish relationships among two or more variables (Tan, 2014). Specifically, it examines whether a change in one variable corresponds to a change in another variable. The researchers utilized a mixed methods approach, which involves integrating quantitative and qualitative research methods within a single study (Johnson et al., 2007). To clarify the research topic, Johnson and Onwuegbuzie (2004, as cited in Creswell, 2003) described mixed methods research as the concurrent or sequential use of diverse data collection methods. In the context of our investigation, it requires combining quantitative and qualitative methods. In our case the quantitative data collection tool is the questionnaire and the qualitative data collection tool is the interview. Utilizing both quantitative and qualitative methods to investigate the same phenomenon can enhance the credibility of the results. If the two sets of data converge, it strengthens the validity of the conclusions, a process termed triangulation (Scribbr, 2021). An experiment would have been more suitable, but the researchers chose a questionnaire because this was most convenient. Considering the restrictions, conducting an experiment would have been highly impractical because of the time, cost efficiency, and accessibility to participants, which means that the participants of the experiment should be present at specific locations and periods of time when a questionnaire responses can be collected easily with higher response rates and bigger population. Another reason why we chose a questionnaire as our primary data collection tool is because all of the measuring tools of SDL (which is a variable of our study) are questionnaires.

2.1.2 Variables

The variables of interest in this study are AI Chatbot Usage Patterns (independent variable) and the self-directed writing (dependent variable). Gender ,previous experience with AI usuage, level of satisfaction with their writing, and how often they practice writing outside the classroom (moderator variables)

Moderation is a concepts used in statistical analysis. Moderation refers to the influence of a third variable, known as the moderator variable, on the relationship between an independent variable and a dependent variable (Aguinis et al., 2013). In other words, moderation occurs when The moderator variable can change the strength or direction of the relationship between the independent and dependent variables (Baron & Kenny, 1986).

2.1.3 Population and sample

According to Dornyei (2007), the term population refers to the subject matter of the study. In light of this, the population consists of 197 L3 EFL Students in Cheikh Laarbi Tbessi University and of the 197, 104 responded. In selecting the sample, the researchers opted for a convenience sampling method since they could not implement randomization because of a number of circumstances and constraints. The researchers chose to work with third year students because they have a much larger population than the M1 Students, and they write more than the L1 and L2 students according to their curriculum; they are also likely to have more experience in writing in English than the L1 and L2 students.

In conducting research, obtaining a representative sample from the population is essential to ensure the validity and reliability of findings (Creswell, 2014). This involves determining an appropriate sample size using a formula that accounts for several key parameters (Cohen, 1988). The confidence level, typically set at 95% or 99%, indicates the level of certainty that the true population parameter falls within the calculated confidence interval. For this explanation, the

standard is 95% confidence level. The margin of error, often set at ±5%, represents the acceptable range of error in the sample estimate. Lastly, the population proportion (p), which is the estimated proportion of the population with a specific characteristic, is considered. If this proportion is unknown, a value of 0.5 is used to account for maximum variability (Cohen, 1988)

According to this formula, a population of 197 requires a sample size of 130 was calculated to achieve the desired margin of error (±5%) at a 95% confidence level. However, we could not obtain a sample size of 130; we could only obtain 104. Because of this, we had to adjust the margin of error to approximately ±6.6% at the same confidence level.

This means that the results from your sample of 104 participants will have a slightly higher variability and less precision compared to the desired sample size, but they remain statistically significant within the context of your research parameters.

2.1.4 Piloting

Prior to conducting the primary investigation, researchers often undertake a preliminary, small-scale version known as a pilot study or feasibility study (In, 2017). The fundamental objective of such a pilot study is to enhance the design of the subsequent, full-scale research by detecting and preventing any potential complications, deficiencies, or unforeseen extraneous variables that could arise (In, 2017). Following the pilot study, investigators typically modify any inadequate or problem-causing elements of the proposed methodology for the main study, based on the experiences and observations gleaned from the pilot (In, 2017). Aspects that may be refined include clarifying ambiguous instructions, addressing potential factors contributing to uncooperative behavior among participants, streamlining inefficient data collection procedures, and optimizing time management strategies, among other elements (In, 2017).

The pilot phase of the study began on April 21st, 2024 and ended the day after. In selecting the sample for the pilot study, the researchers made sure it reflected the sample of the main study. For instance, since the researchers had intended on using third year students of English, the pilot group comprised third year students of English.

We introduced the questionnaire to the selected piloting group (13 students) to answer the questionnaire and give their feedback about it and since we received no negative feedback we did not change or edit anything in the questionnaire before we started using it.

2.1.5 Data collection instruments

2.1.5.1 Quantitative. The questionnaire is the primary source used for gathering data in this research .It contains fifty two (52) questions which are divided into three sections. The first section has (06) questions that deal with the background information about the respondents which are L3 EFL Students. The second part includes questions about exploring the students' practices related to self directed writing, this part has (25) likert scale questions which we adapted from a standardized questionnaire of Olivier (2019) and adjusted it for what suits our purpose by omitting the irrelevant questions of the questionnaire which are 14, 22, 27, 29 and 30. The last part contained 21 questions which explored the L3 EFL Students' frequency of interaction with AI chatbots constructed from 5-point Likert scale. All of the values given to each question were added up for each sction .We have 25 questions for SDW, so each students' response for each question was coded (1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, or 5=Strongly Agree). Also we have 21 questions for AI Chatbot usage, so each students' response for each question was coded (1=Never, 2=Rarely ,3=Sometimes ,4=Often, or 5=Always) ,then all of these values were added, receiving a score of, for example, 98 or 70 or whatever. This overall score represents their SDW and AI chatbot usage score.

2.1.5.2 Qualitative. The interview is the secondary source used for gathering data in this research. It contains nineteen (19) open ended questions which are divided into three sections. The first section has (03) questions that deal with the background information of the respondents which are L3 EFL Students. The second part is about SDW in EFL Writing, this part has (10) questions which we formulated to supplement the questionnaire and gain additional information about our topic. The last part explored the L3 EFL Students' frequency of interaction with Ai chatbots and contained (06) questions.

2.1.6 Procedures

We started by making a questionnaire that serves our study .First we took the questions of the second section which is self directed writing (SDW) from a standerdized questionnaire of Olivier (2019). For the third section, we conducted a literature review about students' usage of AI chatbots, then we extracted 21 purposes for AI chatbot usage in the context of EFL writing from them.We used these purposes as a basis for the questions to ensure content and construct validity. After that, we started by the piloting phase where we chose our piloting group to answer and give us their feedback about the questionnaire, also after distributing the questionnaire, we ran a reliability analysis, which yielded a Chronbach's alpha of .905, for SDW questions and a .937 for AI chatbots use questions suggesting strong internal consistency. Since we received no negative feedback about the questionnaire from the piloting group, we started collecting the data using the questionnaire we designed. Next we thought of an effective strategy which is mixing between collecting the data both online and onsite by making an online questionnaire using Google Forms and sending the link to L3 teachers who helped us by posting it in the L3 google classrooms and then we went to their classes, shared the internet connection with them inside the class and made sure that they answer our questionnaires onsite (inside the classroom) and online (digitally). Next

we designed an interview based on the questionnaire we had by taking the ideas and the aims from the questionnaire to form an interview that assists and reinforces the primary data collection tool (the questionnaire) and we made sure that it also supplements the questionnaire by giving the interviewees the freedom to talk and speak their minds and give us additional thoughts that serves our purpose and we also used an AI chatbot which is "Copilot" only as an assisting tool to help us. After doing all of this we chose our group (10 students) which agreed to participate in an interview with us and gave us an oral consent to record the interviews before we interview them. After collecting the data, we coded each students response. Each question was given a value (none=1, limited=2, moderate=3, extensive=4) for the third question of the first section, and (dissatisfied=1, neutral=2, satisfied=3, very satisfied=4) for the fourth question of the first section, and (Never=1, Rarely=2, occasionally=3, frequently=4, always=5) for the sixth question of the first section, and the same coding mentioned earlier for the second and third sections. Then, we analysed it using SPSS version 26 and extracted the the descriptive and inferential statistics.

2.2 Data Analysis - Results

2.2.1 Descriptive Statistics

2.2.1.1 Section 1 Demographic Information.

2.2.1.1.1 Age

Table 1

Results Statistics 1	N	Minimum	Maximum	Mean	Std. Deviation
Age	104	20	47	21.85	3.705
SDW	104	31.00	123.00	86.2500	15.15983
Aiusage	104	27	110	65.66	18.658
Valid N (listwise)	104				

The sample consisted of 104 participants with ages ranging from 20 to 47 years (M = 21.85, SD = 3.705). The SDW scores ranged from 31.00 to 123.00, with a mean of 86.2500 and a standard deviation of 15.15983. The AI usage scores ranged from 27 to 110, with a mean of 65.66 and a standard deviation of 18.658.

2.2.1.1.2 Gender

Table 2

Results statistics 2

		Frequency	Percent
Valid	Female	77	74.0
	Male	27	26.0
	Total	104	100.0

Table 2 shows the distribution of participants by gender. From 104, 74% of the participants are female, and 26% are male. This indicates that the sample is predominantly female.

2.2.1.1.3 Previous Experience with AI Chatbots

Table 3

Results statistics 3

		Frequency	Percent
Valid	None	6	5.8
	Limited	48	46.2
	Moderate	39	37.5
	Extensive	11	10.6
	Total	104	100.0

Table 3 shows that nearly half of the participants (46.2%) reported having limited experience with AI chatbots, while 37.5% had moderate experience, and 10.6% had extensive

experience. Only a small percentage (5.8%) reported no previous experience. This suggests that the majority of participants have at least some exposure to AI chatbots.

The data indicates that many participants had some experience with AI chatbots. In the interview, interviewee 1 shared "Yes, I've used three types of chatbots, or AI chatbots. I use the Chat GPT, I use the Gimini pro 1.5. And I use the perplexity ai, I found them very interesting and those are my preferred ones." interviewee 3 similarly noted "To answer that question, yes, I have used AI chatbots I have used two. One is the popular Chat GPT. And another one, which is perplexity AI, both of them are popular in the academic sphere." interviewee 2 mentioned a different experience, stating "Well, I did use chatbots especially like Chat GPT at first when it first came out. I mean, it was really exciting thing to hear about it was really influencing a lot of people. And so out of curiosity, I did use it for many other contexts." interviewee 4 simply said "Yes, I used AI chatbots. Before in summarizing some of my lessons and paraphrasing."

2.2.1.1.4 Level of Satisfaction with Your Writing Skills

Table 4

Results statistics 4	Frequency	Percent
dissatisfied	8	7.7
Neutral	52	50.0
Satisfied	43	41.3
Very satisfied	1	1
Total	104	100.0

Table 4 shows that the largest proportion of participants (50%) reported being neutral about their writing skills, followed by (41.3%) who were satisfied. Only a small percentage (7.7%) reported being dissatisfied with their writing skills, and one respondent (1%) expressed being very satisfied with their writing abilities.

2.2.1.1.4 What Type of Writing (in English) do you primarily engage in (Select all that apply). Figure 1 shows that the most common types of writing are academic writing with 72 selection and social media writing with 47. Also creative writing was selected by 37 and professional writing by 19. Other common types include journaling and song writing were chosen by less than 5 of the participants.

Figure 1

Type of Writing percentages

What Type of Writing (in English) do you primarily engage in (Select all that apply)
104 responses

Academic writing (essays, res…	72 (69.2%)
Professional writing (reports,…	19 (18.3%)
Creative writing (stories, poems)	37 (35.6%)
Social media writing (posts, c…	47 (45.2%)
	3 (2.9%)
Songs writing	1 (1%)
Journaling	1 (1%)
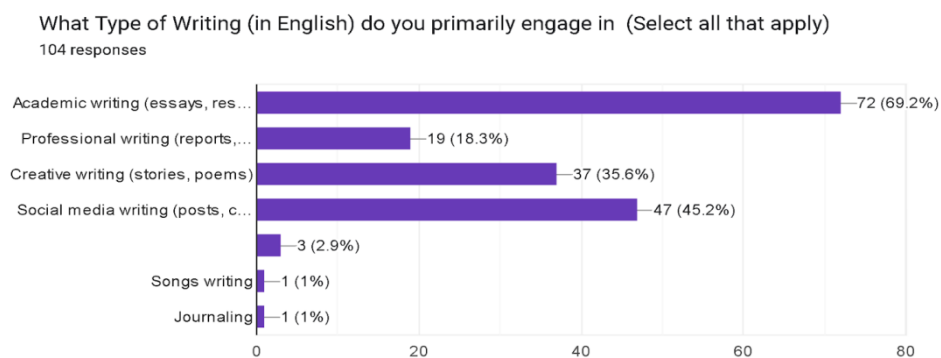
2.2.1.1.5 How often do you practice writing in English outside of formal educational settings. Table 5 displays that the majority of participants (48.1%) reported practicing writing occasionally, while 29.8% practice rarely and 7.7% practice frequently. Only a small percentage (11.5%) never practice, and 2.9% practice always.

Table 5

Results statistics 5	Frequency	Percent
Never	12	11.5
Rarely	31	29.8
Occasionally	50	48.1
Frequently	8	7.7
Always	3	2.9
Total	104	100.0

The data shows writing practice habits vary among participants. In the interview, the majority reported practicing "occasionally", aligning with interviewee 4 who writes mainly for homework - "I don't engage in writing activities that much only in my homework.". Another sizable group practiced "rarely", like interviewee 2 admitting "I'm not really much of a writer outside of the academic context. I don't really write that much. No.". A small portion practiced "frequently", which could relate to interviewee 3 perspective of writing often: "I write often and I'm familiar with many different types of writing.". Very few "never practice" writing, contrasting interviewee 1 doing "free writing in my free time, but not very frequently."

2.2.1.2 Section 2 Self Directed Writing.

Questions 1-4:

In this section, 14.4% strongly agree that they like to write, 40.4% agree, 34.6% are neutral, 6.7% disagree, and 3.8% strongly disagree. 3.8% strongly agree that their writing shows a unique author's voice, 25% agree, 37.5% are neutral, 26% disagree, and 7.7% strongly disagree. Regarding awareness of writing weaknesses, 21.2% strongly agree, 44.2% agree, 19.2% are neutral, 12.5% disagree, and 2.9% strongly disagree. 36.5% strongly agree that they prefer writing without rules or restrictions, 27.9% agree, 14.4% are neutral, 12.5% disagree, and 8.7% strongly disagree.

The majority of the participants tended to agree when asked about if they like to write. In the interview, interviewee 3 agreed with that. He stated "What motivates me to write is my emotions I write whenever I want to express my emotions. And throughout the writing process, I enjoy and like the final product. And I enjoy the journey of writing what I am feeling from emotions. And I like writing in academic context as well", while interviewee 4 disagreed with that "To be honest, I don't enjoy the process that much, and nothing motivates me to write".

Also most of the participants had a neutral opinion about having a unique auther's voice

Table 6: Descriptive statistics for Q1-4

	Frequency	Percent
I like to write		
1 strongly disagree	4	3.8
2 disagree	7	6.7
3 neutral	36	34.6
4 agree	42	40.4
5 strongly agree	15	14.4
Total	104	100.0
My writing shows a unique author's voice		
1 strongly disagree	8	7.7
2 disagree	27	26.0
3 neutral	39	37.5
4 agree	26	25.0
5 strongly agree	4	3.8
Total	104	100.0
I know which problems I have in terms of writing		
1 strongly disagree	3	2.9
2 disagree	13	12.5
3 neutral	20	19.2
4 agree	46	44.2
5 strongly agree	22	21.2
Total	104	100.0
I like writing without rules or restrictions		
1 strongly disagree	9	8.7

	Frequency	Percent
2 disagree	13	12.5
3 neutral	15	14.4
4 agree	29	27.9
5 strongly agree	38	36.5
Total	104	100.0

in their writings, interviewee 1 stated "my style of writing, I actually am not fixed in one style. As I said, like, I usually just imitate what I read. Or whenever I read something, I just imitate them unconsciously." Regarding the awareness of writing weaknesses , the highest percentage of the participants agreed that they are aware of that and also all of the interviewees were aware of that too, for example , Interviewee 7 said "yeah , I am aware of the challenges." When asked if they prefer writing without rules and restrictions, most of the participants and all of the interviewees agreed on that, interviewee 2 answered "I hate rules. Rules were made to be broken and nothing creative, or any initiative was ever made because of following rules".

Table 7: Descriptive statistics for Q5-8

	Frequency	Percent
I choose by myself how I can improve my writing		
1 strongly disagree	6	5.8
2 disagree	20	19.2
3 neutral	22	21.2
4 agree	37	35.6
5 strongly agree	19	18.3
Total	104	100.0
I like writing on a computer		
1 strongly disagree	6	5.8
2 disagree	28	26.9
3 neutral	23	22.1
4 agree	28	26.9
5 strongly agree	19	18.3
Total	104	100.0
I like to choose topics on which I want to write myself		
1 strongly disagree	5	4.8
2 disagree	6	5.8
3 neutral	13	12.5

4 agree	35	33.7
5 strongly agree	45	43.3
Total	104	100.0
My writing displays my own opinion		
1 strongly disagree	7	6.7
2 disagree	6	5.8
3 neutral	29	27.9
4 agree	43	41.3
5 strongly agree	19	18.3
Total	104	100.0

Questions 5-8:

In this section, 18.3% strongly agree they choose how to improve their writing, 35.6% agree, 21.2% are neutral, 19.2% disagree, and 5.8% strongly disagree. A similar pattern emerges with liking to write on computers: 18.3% strongly agree, 26.9% agree, 22.1% are neutral, 26.9% disagree, and 5.8% strongly disagree. On topic selection, 43.3% strongly agree, 33.7% agree, 12.5% are neutral, 5.8% disagree, and 4.8% strongly disagree. Finally, on expressing personal opinions, 18.3% strongly agree, 41.3% agree, 27.9% are neutral, 5.8% disagree, and 6.7% strongly disagree.

Questions 9-12:

In this section, 10.6% strongly agree they can solve writing problems, 32.7% agree, 39 37.5% are neutral, 12.5% disagree, and 6.7% strongly disagree. 29.8% strongly agree they prefer natural language, 39.4% agree, 15.4% are neutral, 11.5% disagree, and 3.8% strongly disagree. For knowing how to improve their writing, 13.5% strongly agree, 31.7% agree, 31.7% are neutral, 16.3% disagree, and 6.7% strongly disagree. Lastly, on finding errors more easily on computers, 25% strongly agree, 26% agree, 27.9% are neutral, 14.4% disagree, and 6.7% strongly disagree.

The data shows opinions were mixed on solving writing problems, though, in the interview, interviewee 4 described successfully addressing her "lack of vocabulary, especially in some topics, I use AI to look for some words, or just using the dictionary." and interviewee 3 solved issues through "pilot study" and practice. There was strong agreement around preferring natural language. interviewee 1 felt current AI "has a robotic voice" and suggested "make it more human like." interviewee 2 also wanted AIs to have a "human voice in it.". Opinions divided on knowing how to improve skills. interviewee 3 felt "practice" and "writing contests" help, while interviewee 1 used methods like vocabulary lists. Most agreed finding errors easier on computers, interviewee 1 uses "not one but rather more than one" tool like "autocorrect or spelling corrector" making it "much much easier" than handwriting.

Table 8: Descriptive statistics for Q9-12

	Frequency	Percent
I know how to solve problems regarding my writing		
1 strongly disagree	7	6.7
2 disagree	13	12.5
3 neutral	39	37.5
4 agree	34	32.7
5 strongly agree	11	10.6
Total	104	100.0
I like using language that is comfortable and natural (like spoken language) in my writing		
1 strongly disagree	4	3.8
2 disagree	12	11.5
3 neutral	16	15.4
4 agree	41	39.4
5 strongly agree	31	29.8
Total	104	100.0
I know what to do in order to improve the quality of my writing		
1 strongly disagree	7	6.7
2 disagree	17	16.3
3 neutral	33	31.7
4 agree	33	31.7

	Frequency	Percent
5 strongly agree	14	13.5
Total	104	100.0
I can find mistakes easier on the computer than when I am handwriting		
1 strongly disagree	7	6.7
2 disagree	15	14.4
3 neutral	29	27.9
4 agree	27	26.0
5 strongly agree	26	25.0
Total	104	100.0

Table 9: Descriptive statistics for Q13-16

	Frequency	Percent
I like writing outside of the classroom or work context		
1 strongly disagree	9	8.7
2 disagree	17	16.3
3 neutral	28	26.9
4 agree	27	26.0
5 strongly agree	23	22.1
Total	104	100.0
My writing impresses other people		
1 strongly disagree	7	6.7
2 disagree	19	18.3
3 neutral	43	41.3
4 agree	29	27.9
5 strongly agree	6	5.8
Total	104	100.0
I like writing in the same language or dialect that I talk in		
1 strongly disagree	14	13.5
2 disagree	18	17.3
3 neutral	31	29.8
4 agree	23	22.1
5 strongly agree	18	17.3
Total	104	100.0
I revise my writing repeatedly before I hand it in		
1 strongly disagree	8	7.7

2 disagree	11	10.6
3 neutral	30	28.8
4 agree	34	32.7
5 strongly agree	21	20.2
Total	104	100.0

Questions 13-16:

In this section, 22.1% strongly agree they enjoy writing outside formal settings, 26% agree, 26.9% are neutral, 16.3% disagree, and 8.7% strongly disagree. 5.8% strongly agree their writing impresses others, 27.9% agree, 41.3% are neutral, 18.3% disagree, and 6.7% strongly disagree. 17.3% strongly agree they prefer writing in their spoken language, 22.1% agree, 29.8% are neutral, 17.3% disagree, and 13.5% strongly disagree. Finally, for revising writing, 20.2% strongly agree, 32.7% agree, 28.8% are neutral, 10.6% disagree, and 7.7% strongly disagree.

Questions 17-20:

In this section, regarding the ease of making changes and editing text on computers 38.5% strongly agree, 33.7% agree, 15.4% are neutral, 5.8% disagree, and 6.7% strongly disagree. For communicating effectively in writing, 16.3% strongly agree, 37.5% agree, 23.1% are neutral, 14.4% disagree, and 8.7% strongly disagree. 17.3% strongly agree they are emotionally involved in their writing, while 27.9% agree, 27.9% are neutral, 12.5% disagree, and 11.5% strongly disagree. Finally, for enjoying learning about new writing conventions, 17.3% strongly agree, 42.3% agree, 25% are neutral, 9.6% disagree, and 5.8% strongly disagree.

Most agreed editing on computers is easier, in the interview, interviewee 2 stated "Definitely, definitely, I would rather write on a computer... it's easier to edit, it's easier to decorate and it's easier to present in a much formal and better presented way." However, some like interviewee 3 preferred handwriting first to "map mind your ideas.". On communicating effectively in writing, many agreed it's important, though some disagreed. interviewee 1 aims for "the flow of

thoughts" to enhance effectiveness. interviewee 3 focuses on "consistency" to "convey" his intended message. Participants had mixed views on emotional involvement in writing. interviewee 2 is motivated by "emotions I write whenever I want to express my emotions." But interviewee 4 disagreed - "nothing motivates me to write." Most enjoyed learning new conventions, though some disagreed. interviewee 1 prefers "writing with rules and restrictions" as it "makes the writing quality better." interviewee 2 opposes restrictions, stating "Rules were made to be broken."

Table 10: Descriptive statistics for Q17-20

	Frequency	Percent
The computer makes it easy to change and edit texts		
1 strongly disagree	7	6.7
2 disagree	6	5.8
3 neutral	16	15.4
4 agree	35	33.7
5 strongly agree	40	38.5
Total	104	100.0
I can communicate effectively by writing		
1 strongly disagree	9	8.7
2 disagree	15	14.4
3 neutral	24	23.1
4 agree	39	37.5
5 strongly agree	17	16.3
Total	104	100.0
I am emotionally involved in my writing		
1 strongly disagree	12	11.5
2 disagree	13	12.5
3 neutral	29	27.9
4 agree	29	27.9
5 strongly agree	21	20.2
Total	104	100.0
I like learning about new ways of writing (writing conventions)		

	Frequency	%
1 strongly disagree	6	5.8
2 disagree	10	9.6
3 neutral	26	25.0
4 agree	44	42.3
5 strongly agree	18	17.3
Total	104	100.0

Table 11: Descriptive statistics for Q21-25

	Frequency	%
I know how I learned (and still learn) how to write		
1 strongly disagree	5	4.8
2 disagree	15	14.4
3 neutral	23	22.1
4 agree	46	44.2
5 strongly agree	15	14.4
Total	104	100.0
I know how to look for information on the computer and use it in my writing		
1 strongly disagree	5	4.8
2 disagree	12	11.5
3 neutral	17	16.3
4 agree	47	45.2
5 strongly agree	23	22.1
Total	104	100.0
I like to write on matters that I care for		
1 strongly disagree	9	8.7
2 disagree	5	4.8
3 neutral	14	13.5
4 agree	38	36.5
5 strongly agree	38	36.5
Total	104	100.0

I follow a specific process when I write		
1 strongly disagree	5	4.8
2 disagree	17	16.3
3 neutral	30	28.8
4 agree	38	36.5
5 strongly agree	14	13.5
Total	104	100.0

I can easily, when writing, solve problems on the computer		
1 strongly disagree	5	4.8
2 disagree	14	13.5
3 neutral	36	34.6
4 agree	33	31.7
5 strongly agree	16	15.4
Total	104	100.0

Questions 21-25 :

In this section, 14.4% strongly agree they know how they learned to write, 44.2% agree, 22.1% are neutral, 14.4% disagree, and 4.8% strongly disagree. 22.1% strongly agree they use online resources, 45.2% agree, 16.3% are neutral, 11.5% disagree, and 4.8% strongly disagree. 36.5% strongly agree they like writing about things they care about, 36.5% agree, 13.5% are neutral, 4.8% disagree, and 8.7% strongly disagree. For following a writing process, 13.5% strongly agree, 36.5% agree, 28.8% are neutral, 16.3% disagree, and 4.8% strongly disagree. For,easily solve problems when writing on the computer,15.4% strongly agree, 31.7% agree, 34.6% are neutral, 13.5% disagree, and 4.8% ,strongly disagree.

2.2.1.3 Section 3 AI Chatbot Usage.

Questions 1-4:

These tables highlight the need for writing support from AI chatbots. In terms of vocabulary assistance, 14.4% individuals stated they always require aid, while 23.1% indicated they often do, 33.7% mentioned sometimes, 15.4% rarely, and 13.5% never. Regarding sentence structure, 13.5% reported always needing help, 14.4% often, 33.7% sometimes, 25% rarely, and 13.5% never. In

terms of punctuation 18.3% always needed help, 8.7% often, 23.1% sometimes, 25% rarely, and 25% never. As for spelling, 16.3% always sought support, 11.5% often, 23.1% sometimes, 32.7% rarely, and 16.3% never.

The data shows a range of needs for AI vocabulary assistance, in the interview, interviewee 4 mentioned using AI "to look for some words" due to her "lack of vocabulary." However, interviewee 3 "rarely uses the help of AI tools" as his "writing is decent.". For sentence structure help, interviewee 1 described getting AI "to give me some standard standardized like structures" to improve this area. Punctuation support saw contrasts interviewee 2 stated about AI proofreading "I don't care. To be honest. That's my honest answer" and "The content, it's always the content that matters". On spelling aid, interviewee 1 uses multiple tools making it "much much easier to spot mistakes" versus handwriting.

Table 12: Descriptive statistics for Q1-4

	Frequency	Percent
Help with vocabulary		
1 strongly disagree	14	13.5
2 disagree	16	15.4
3 neutral	35	33.7
4 agree	24	23.1
5 strongly agree	15	14.4
Total	104	100.0
Help with sentence structure		
1 strongly disagree	14	13.5
2 disagree	26	25.0
3 neutral	35	33.7
4 agree	15	14.4
5 strongly agree	14	13.5
Total	104	100.0
Help with punctuation		
1 strongly disagree	26	25.0
2 disagree	26	25.0

	Frequency	Percent
3 neutral	24	23.1
4 agree	9	8.7
5 strongly agree	19	18.3
Total	104	100.0
Help with spelling		
1 strongly disagree	17	16.3
2 disagree	34	32.7
3 neutral	24	23.1
4 agree	12	11.5
5 strongly agree	17	16.3
Total	104	100.0

Questions 5-8: This section delineates a persistent requirement for assistance by AI chatbots in specific areas of writing. The frequencies of needing help are as follows: Capitalization: 17.3% always, 6.7% often, 18.3% sometimes, 18.3% rarely, 39.4% never. Writing style 12.5% always, 15.4% often, 22.1% sometimes, 24% rarely, 26% never. Grammar: 15.4% always, 18.3% often, 26.9% sometimes, 25% rarely, 14.4% never. Brainstorming/idea generation: 21.2% always, 17.3% often, 31.7% sometimes, 16.3% rarely, 13.5% never.

Table 13: Descriptive statistics for Q5-8

	Frequency	Percent
Help with capitalization		
1 strongly disagree	41	39.4
2 disagree	19	18.3
3 neutral	19	18.3
4 agree	7	6.7
5 strongly agree	18	17.3
Total	104	100.0
Help with writing style		
1 strongly disagree	27	26.0
2 disagree	25	24.0
3 neutral	23	22.1
4 agree	16	15.4
5 strongly agree	13	12.5
Total	104	100.0

Help with grammar

1 strongly disagree	15	14.4
2 disagree	26	25.0
3 neutral	28	26.9
4 agree	19	18.3
5 strongly agree	16	15.4
Total	104	100.0

Brainstorming topics or generating ideas

1 strongly disagree	14	13.5
2 disagree	17	16.3
3 neutral	33	31.7
4 agree	18	17.3
5 strongly agree	22	21.2
Total	104	100.0

Table 14 : Descriptive statistics for Q9-12

	Frequency	Percent
help with outlining or structuring arguments		
1 strongly disagree	15	14.4
2 disagree	25	24.0
3 neutral	25	24.0
4 agree	25	24.0
5 strongly agree	14	13.5
Total	104	100.0
Help with developing supporting details and evidence		
1 strongly disagree	7	6.7
2 disagree	21	20.2
3 neutral	27	26.0
4 agree	26	25.0
5 strongly agree	23	22.1
Total	104	100.0
proofreading for clarity and coherence		
1 strongly disagree	16	15.4
2 disagree	18	17.3
3 neutral	32	30.8
4 agree	20	19.2
5 strongly agree	18	17.3

Total	104	100.0
personalized feedback		
1 strongly disagree	26	25.0
2 disagree	27	26.0
3 neutral	23	22.1
4 agree	13	12.5
5 strongly agree	15	14.4
Total	104	100.0

Questions 9-12:

These tables highlight a desire for assistance in more advanced writing tasks. The frequencies for needing help are as follows: Outlining/structuring arguments: 13.5% always, 24% often, 24% sometimes, 24% rarely, 14.4% never. Developing supporting details & evidence: 22.1% always, 25% often, 26% sometimes, 20.2% rarely, 6.7% never. Proofreading for clarity & coherence: 17.3% always, 19.2% often, 30.8% sometimes, 17.3% rarely, 15.4% never. Personalized feedback: 14.4% always, 12.5% often, 22.1% sometimes, 26% rarely, 25% never.

The data shows participants commonly need assistance with outlining/structuring arguments. In the interview, interviewee 1 described using AI to "get me some standard standardized like structures" for this task. Developing supporting details and evidence was an area many regularly sought aid in. interviewee 3 relied on Perplexity AI "to compile the data for me" before writing himself. For proofreading clarity and coherence, a considerable number sometimes required help, though interviewee 4 used AI "to correct" grammar mistakes. However, opinions divided on wanting personalized feedback, with a minority always/often desiring it but a notable group rarely/never seeking it out. interviewee 2 prefers focusing on "ideas rather than the structure."

Questions 13-16:

These tables reinforce the need for feedback on various aspects of writing. The frequencies are: Overall writing style: 13.5% always, 13.5% often, 26% sometimes, 22.1% rarely, 25% never.

Content improvement: 16.3% always, 13.5% often, 33.7% sometimes, 19.2% rarely, 17.3% never.

Word choice & sentence flow: 14.4% always, 17.3% often, 26% sometimes, 22.1% rarely, 20.2% never. Evaluating writing effectiveness: 17.3% always, 20.2% often, 21.2% sometimes, 29.8% rarely, 11.5% never.

Table 15: Descriptive statistics for Q13-16

	Frequency	Percent
getting feedback on overall writing style		
1 strongly disagree	26	25.0
2 disagree	23	22.1
3 neutral	27	26.0
4 agree	14	13.5
5 strongly agree	14	13.5
Total	104	100.0
identifying areas for improvement in content		
1 strongly disagree	18	17.3
2 disagree	20	19.2
3 neutral	35	33.7
4 agree	14	13.5
5 strongly agree	17	16.3
Total	104	100.0
Receiving suggestions for word choice and sentence flow		
1 strongly disagree	21	20.2
2 disagree	23	22.1
3 neutral	27	26.0
4 agree	18	17.3

	Frequency	Percent
5 strongly agree	15	14.4
Total	104	100.0
Evaluating the effectiveness of the writing		
1 strongly disagree	12	11.5
2 disagree	31	29.8
3 neutral	22	21.2
4 agree	21	20.2
5 strongly agree	18	17.3
Total	104	100.0

Questions 17-21:

These tables highlight the need for support in specific writing tasks. The frequencies are:

Translation: 29.8% always, 15.4% often, 26% sometimes, 17.3% rarely, 11.5% never.

Summarizing: 30.8% always, 26.9% often, 14.4% sometimes, 24% rarely, 3.8% never.

Paraphrasing: 33.7% always, 19.2% often, 22.1% sometimes, 19.2% rarely, 5.8% never.

Table 16 : Descriptive statistics for Q17-21

	Frequency	Percent
Translating text		
1 strongly disagree	12	11.5
2 disagree	18	17.3
3 neutral	27	26.0
4 agree	16	15.4
5 strongly agree	31	29.8
Total	104	100.0
Summarizing		
1 strongly disagree	4	3.8
2 disagree	25	24.0
3 neutral	15	14.4
4 agree	28	26.9
5 strongly agree	32	30.8
Total	104	100.0
Paraphrasing		
1 strongly disagree	6	5.8
2 disagree	20	19.2
3 neutral	23	22.1

	Frequency	Percent
4 agree	20	19.2
5 strongly agree	35	33.7
Total	104	100.0
Help providing exercises or practice		
1 strongly disagree	11	10.6
2 disagree	25	24.0
3 neutral	22	21.2
4 agree	20	19.2
5 strongly agree	26	25.0
Total	104	100.0
Personal/emotional support		
1 strongly disagree	44	42.3
2 disagree	24	23.1
3 neutral	8	7.7
4 agree	10	9.6
5 strongly agree	18	17.3
Total	104	100.0

Practice exercises: 25% always, 19.2% often, 21.2% sometimes, 24% rarely, 10.6% never.

Personal/emotional support: 17.3% always, 9.6% often, 7.7% sometimes, 23.1% rarely, 42.3% never.

Summarizing tasks saw a considerable number wanting help. In the interview, this aligned with interviewee 2 comments about using AI "out of curiosity" to gather "informations". Paraphrasing, a considerable number required aid, reinforcing appreciation for AI writing support at this level. Practice exercises revealed a range of needs, with a considerable number requiring support at this level. This aligns with interviewee 2 comments about using AI "out of curiosity" to gather "informations". However, few expressed wanting personal support, with the majority requiring support at this level. This aligns with interviewee 2 comments, stating "I don't care, to be honest. That's my honest answer" about AI Proofreading.

Table 17 : Descriptive statistics for Q22

	Frequency	Percent

How often do you use Ai chatbots to do the writing for you (you do not edit or change the ai-generated response)		
1 strongly disagree	11	10.6
2 disagree	28	26.9
3 neutral	45	43.3
4 agree	12	11.5
5 strongly agree	8	7.7
Total	104	100.0

Question 22:

This table, concerning AI-assisted writing without editing, reveals that 7.7% always use AI, 11.5% often do, 43.3% sometimes do, 26.9% rarely do, and 10.6% never do. These numbers suggest a growing acceptance of AI tools, but a preference for maintaining control over the writing process.

2.2.2 Inferential statistics

2.2.2.1 Normality Test Analysis. The Kolmogorov-Smirnov test is a statistical test used to determine if a dataset follows a normal distribution (Mishra et al., 2019). It compares the cumulative distribution function of the data with the expected cumulative distribution function of a normal distribution. According to the Tests of Normality table, the Kolmogorov-Smirnov test showed that the SDW variable was significantly non-normal, $D(104) = 0.156$, $p = 0.000$. However, the Chatbot usage variable was normally distributed, $D(104) = 0.070$, $p = 0.200$.

The Shapiro-Wilk test is another commonly used test to assess normality (Razali & Wah, 2011). It evaluates the correlation between the data and the corresponding normal scores. The Shapiro-Wilk test results in the table confirm the findings of the Kolmogorov-Smirnov test, indicating a significant deviation from normality for the SDW variable, $W(104) = 0.900$, $p = 0.000$, while the Chatbot usage variable followed a normal distribution, $W(104) = 0.986$, $p = 0.322$.

Table 18

Normality test results

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
SDW	.156	104	.000	.900	104	.000
Chatbot usage	.070	104	.200[*]	.986	104	.322

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The test of normality is used to determine if a data set is well-modeled by a normal distribution (Mishra et al., 2019). Normality is an important assumption for many parametric statistical tests, such as t-tests, ANOVA, and Pearson's correlation (Ghasemi & Zahediasl, 2012). When the data violates the normality assumption, non-parametric tests or data transformations may be required.

Since the SDW variable violated the assumption of normality, the Pearson correlation coefficient, which requires both variables to be normally distributed, could not be used to assess the relationship between SDW and Chatbot usage. Instead, the non-parametric Spearman's rank-order correlation (Spearman's rho) was employed.

Table 19

Spearman's Correlation Coefficient test result

Spearman's Correlation Coefficient

			SDW
Spearman's rho	Chatbot Usage	Correlation Coefficient	**.202**[*]

		Sig. (2-tailed)	**.040**
		N	104

The Spearman's rank-order correlation is a non-parametric test that measures the strength and direction of the association between two variables (Mishra et al., 2019). A non-parametric test is a statistical test that does not make assumptions about the underlying distribution of the data (Hollander et al., 2014). These tests are used when the data violates the assumptions of parametric tests, such as normality or homogeneity of variance (Sheskin, 2011).According to Hollander et al. (2014), "Nonparametric procedures are distribution-free methods that make no assumptions about the form of the underlying population" (p. 1)

It does not require the variables to be normally distributed, making it a suitable alternative when the normality assumption is violated. The Spearman's rho table shows a correlation coefficient of 0.202 between Chatbot usage and SDW. This correlation was statistically significant at the 0.05 level (2-tailed), $p = 0.040$, with N = 104. the correlation is very weak although it is statistically significant.

2.2.2.2 Moderatino Regression Test Analysis.

 Table 20

Moderatino Regression Test results for Gender

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	69.842	6.744		10.356	.000
	Aiusage	.160	.078	.197	2.035	.044
	Gender	4.702	3.323	.137	1.415	.160

2	(Constant)	59.119	16.859		3.507	.001
	Aiusage	.322	.247	.397	1.304	.195
	Gender	13.593	13.232	.395	1.027	.307
	ModeratorGender	-.135	.194	-.336	-.694	.489

a. Dependent Variable: SDW

Table 20 provides output for the moderation analysis for gender (conducted through linear regression) yielded by SPSS. In the analysis, we analyzed the influence of gender on the relationship between the variables AI usage and SDW. Model 2, which is the default model for interpreting moderation, provides three different rows (in addition to the constant). Each row explains the relationship between that particular variable and the dependent variable SDW. The most important number for interpretation is the significance value (sig., also known as the p-value). At a significance level of 0.05, any number below or equal to 0.05 indicates that the analysis for

that variable is statistically significant. Any significance value above 0.05 indicates that the analysis is not statistically significant. The first row (Aiusage) tests whether AI usage alone predicts the dependent variable SDW. According to the regression analysis, this effect is not statistically significant (p=0.195), which means that AI usage is not a strong predictor of SDW. The second row tests whether gender alone is a predictor of SDW. According to the moderation analysis, gender is not a strong predictor of SDW (p=0.307). The final row (ModeratorGender) tests the moderation effect of gender, meaning whether gender effects the relationship between Ai usage and SDW. According to the moderation analysis, gender is not a of the relationship between Ai usage and SDW (p=0.489).

Table 21

Moderatino Regression Test for Previous Experience

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	71.922	6.438		11.172	.000
	Aiusage	.137	.082	.168	1.662	.100
	Previous Experience with AI Chatbots	2.116	2.012	.106	1.051	.296
2	(Constant)	47.781	19.734		2.421	.017
	Aiusage	.494	.288	.608	1.715	.089
	Previous Experience with AI Chatbots	11.173	7.283	.562	1.534	.128
	Moderator_previous_Experience	-.131	.101	-.729	-1.294	.199

a. Dependent Variable: SDW

Table 21 provides output for the moderation analysis for previous experience with AI chatbots (conducted through linear regression) yielded by SPSS. In the analysis, we analyzed the influence of previous experience on the relationship between the variables AI usage and SDW. Model 2, which is the default model for interpreting moderation, provides three different rows (in addition to the constant). Each row explains the relationship between that particular variable and the dependent variable SDW. The most important number for interpretation is the significance value (sig., also known as the p-value). At a significance level of 0.05, any number below or equal to 0.05 indicates that the analysis for that variable is statistically significant. Any significance value above 0.05 indicates that the analysis is not statistically significant. The first row (Aiusage) tests whether AI usage alone predicts the dependent variable SDW. According to the regression analysis, this effect is not statistically significant (p=0.089), which means that AI usage is not a strong predictor of SDW. The second row tests whether previous experience with AI chatbots alone is a predictor of SDW. According to the moderation analysis, previous experience is not a strong predictor of SDW (p=0.128). The final row (Moderator_previous_Experience) tests the moderation effect of previous experience, meaning whether previous experience effects the relationship between AI usage and SDW. According to the moderation analysis, previous experience is not a moderator of the relationship between AI usage and SDW (p=0.199).

Table 22

Moderatino Regression Test for Level of Satisfaction

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	62.038	7.600		8.163	.000
	Aiusage	.165	.077	.203	2.133	.035
	Level of Satisfaction With your Writing Skills	5.672	2.337	.231	2.427	.017
2	(Constant)	65.290	19.686		3.317	.001
	Aiusage	.115	.287	.142	.402	.689
	Level of Satisfaction With your Writing Skills	4.297	8.028	.175	.535	.594
	Moderator_Level_of_satisfaction	.021	.117	.085	.179	.858

a. Dependent Variable: SDW

Table 22 provides the output for the moderation analysis for the level of satisfaction with writing skills (conducted through linear regression) yielded by SPSS. In the analysis, we analyzed the influence of the level of satisfaction with writing skills on the relationship between the variables AI usage and SDW. Model 2, which is the default model for interpreting moderation, provides three different rows (in addition to the constant). Each row explains the relationship between that particular variable and the dependent variable SDW. The most important number for interpretation is the significance value (sig., also known as the p-value). At a significance level of 0.05, any number below or equal to 0.05 indicates that the analysis for that variable is statistically significant.

Any significance value above 0.05 indicates that the analysis is not statistically significant. The first row (Aiusage) tests whether AI usage alone predicts the dependent variable SDW. According to the regression analysis, this effect is not statistically significant (p=0.689), which means that AI usage is not a strong predictor of SDW. The second row tests whether the level of satisfaction with writing skills alone is a predictor of SDW. According to the moderation analysis, the level of satisfaction with writing skills is not a strong predictor of SDW (p=0.594). The final row (Moderator_Level_of_satisfaction) tests the moderation effect of the level of satisfaction with writing skills, meaning whether it affects the relationship between AI usage and SDW. According to the moderation analysis, the level of satisfaction with writing skills is not a moderator of the relationship between AI usage and SDW (p=0.858).

Table 23 provides output for the moderation analysis for the variable "How often do you practice writing in English outside of formal educational settings" (conducted through linear regression) yielded by SPSS. In the analysis, we analyzed the influence of this variable on the relationship between AI usage and SDW. Model 2, which is the default model for interpreting moderation, provides three different rows (in addition to the constant). Each row explains the relationship between that particular variable and the dependent variable SDW. The most important number for interpretation is the significance value (sig., also known as the *p-*value). At a significance level of 0.05, any number below or equal to 0.05 indicates that the analysis for that variable is statistically significant. Any significance value above 0.05 indicates that the analysis is not statistically significant. The first row (Aiusage) tests whether AI usage alone

Table 23

Moderatino Regression Test for Frequancy of writing in english

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	67.964	6.862		9.904	.000
	Aiusage	.164	.078	.202	2.104	.038
	How often do you practice writing in English outside of formal educational settings	2.881	1.624	.170	1.774	.079
2	(Constant)	60.661	17.468		3.473	.001
	Aiusage	.272	.250	.335	1.088	.279
	How often do you practice writing in English outside of formal educational settings	5.742	6.497	.340	.884	.379
	Moderation_How_Often_Practice	-.043	.093	-.218	-.455	.650

a. Dependent Variable: SDW

predicts the dependent variable SDW. According to the regression analysis, this effect is not statistically significant (p=0.279), which means that AI usage is not a strong predictor of SDW. The second row tests whether the variable "How often do you practice writing in English outside of formal educational settings" alone is a predictor of SDW. According to the moderation analysis, this variable is not a strong predictor of SDW (p=0.379). The final row (Moderation_How_Often_Practice) tests the moderation effect of this variable, meaning whether it affects the relationship between AI usage and SDW. According to the moderation analysis, this variable is not a moderator of the relationship between AI usage and SDW (p=0.650).

2.3 Interpretation and Discussion

The current study aimed to investigate the relationship between AI chatbot usage and SDW among third-year EFL students. It sought to explore how the frequency of interaction with chatbots correlates with students' SDL in EFL writing, identify any potential moderating factors that influence this relationship, and understand how students are using AI chatbots for different purposes in relation to EFL writing.

The first research question (RQ1) explored how students are using AI chatbots for different purposes in relation to EFL writing. The descriptive statistics revealed that the majority of participants reported using AI chatbots for various purposes, including vocabulary assistance, sentence structure, grammar, brainstorming, outlining, proofreading, and summarizing. This suggests that students perceive chatbots as valuable tools for supporting their writing process. However, the frequency of using chatbots for different purposes varied, with some students relying on them more frequently than others. As interviewee 1 mentioned, "I use them very frequently, I mean, in my writing process, especially academic ones." This indicates that the level of engagement with chatbots may differ among learners, potentially influencing their self-directedness in writing. This finding is in line with the TAM, which suggests that perceived usefulness and perceived ease of use are key factors influencing technology adoption (Davis, 1989). Students who find chatbots useful and easy to use are more likely to integrate them into their writing process, potentially leading to increased self-directedness.

To delve deeper into the connection between AI chatbot usage and self-directed writing , the second research question (RQ2) investigated the correlation between the frequency of interaction with AI chatbots and EFL students' SDW. The null hypothesis (H0) for RQ2 stated that there is no correlation between these two variables, while the alternative hypothesis (HA) proposed a positive correlation. The results of the study supported the alternative hypothesis, revealing a

very weak positive correlation although it is statistically significant (Spearman's rho = 0.202, p = 0.040) between AI chatbot usage and SDW. This suggests that students who use chatbots more frequently tend to exhibit higher levels of self-directedness in their writing. This finding aligns with previous research that has shown the positive impact of AI chatbots on language learning outcomes. For instance, a study by Chen and Cheng (2023) found that EFL learners who used a chatbot for writing practice showed significant improvement in their writing fluency and accuracy compared to those who did not use the chatbot. The instant feedback, personalized guidance, and opportunities for autonomous practice offered by chatbots are all essential components of SDL. As interviewee 3 stated, "I rely on Perplexity AI to compile the data for me... I do the writing afterwards." This highlights how AI can support learners in taking ownership of their learning process and developing the skills necessary for SDW.

However, the correlation between AI chatbot usage and SDW was very weak (r = .202), indicating that other factors may be influencing this relationship. The third research question (RQ3) examined the potential moderating effect of participant-related factors on the relationship between chatbot use and SDW. The null hypothesis (H0) for RQ3 stated that there are no participant-related factors that moderate this relationship, while the alternative hypothesis (HA) proposed that such factors do exist. The moderation analysis revealed that gender, previous experience with AI chatbots, level of satisfaction with writing skills, and frequency of writing practice outside of formal settings did not significantly moderate the relationship between AI chatbot usage and SDW. This suggests that the impact of AI chatbots on SDW is not dependent on these individual differences or contextual factors. As interviewee 2 mentioned, "I don't rely fully on AI bots, I just use it to help me like correct sentences or check grammar and spelling mistakes." This highlights that learners may use chatbots in different ways, regardless of their individual characteristics or writing habits. This finding is consistent with previous research that has shown mixed results

regarding the moderating effects of individual differences on the relationship between technology use and learning outcomes (Huang et al., 2020)..

The interview responses also revealed that students' perceptions of AI chatbots' effectiveness varied. Some students found them highly helpful in improving their writing skills, while others expressed concerns about their accuracy and potential negative impact on creativity. For example, interviewee 7 stated, "The problem of AI, it's given wrong information. Sometimes I give him true informations. And he says, like, yeah, you're correct." This highlights the need for further research to explore the specific ways in which chatbots can be designed and implemented to maximize their benefits for SDW while addressing potential limitations. This aligns with the concerns raised by other researchers regarding the need for careful consideration of pedagogical aspects and potential challenges when incorporating AI technologies in language education (Holmes et al., 2019).

The descriptive statistics further revealed that the majority of participants (50%) reported being neutral about their writing skills, followed by 41.3% who were satisfied. This suggests that most students have a moderate level of confidence in their writing abilities. However, it is important to note that a small percentage (7.7%) reported being dissatisfied with their writing skills. This indicates that there is still a need for support and interventions to help these students improve their writing confidence and skills. This finding aligns with previous research that has shown a link between self-efficacy and SDL (Bandura, 1997). Students who have higher self-efficacy in their writing abilities are more likely to engage in SDL behaviors, such as setting goals, seeking feedback, and taking initiative to improve their writing.

The qualitative data obtained from the interviews provided rich insights into the diverse ways in which students utilize AI chatbots in their writing process. The analysis of the interviews revealed that the majority of participants expressed positive views towards using AI chatbots in

their writing process. They highlighted various benefits, such as assistance with grammar and vocabulary, brainstorming ideas, and improving the overall quality of their writing. For example, Interviewee 1 stated that they "use AI chatbots a lot in my studies and in my job," and found it to be a "very beneficial experience." Similarly, Interviewee 3 mentioned relying on Perplexity AI to compile data and using chatbots for academic purposes.

However, the interviews also revealed some concerns and challenges associated with AI chatbot usage. Some participants expressed reservations about the accuracy and reliability of the information provided by chatbots. For instance, Interviewee 7 pointed out that AI chatbots can sometimes provide incorrect information, even when presented with accurate details. Additionally, some participants, like Interviewee 2, emphasized the importance of not relying entirely on AI chatbots and using them as tools to complement their own writing skills.

The interviews also shed light on the diverse ways in which students utilize AI chatbots for different writing purposes. Some participants, like Interviewee 1, reported using chatbots extensively for various tasks, including vocabulary assistance, sentence structure, and grammar correction. This suggests that these students view chatbots as valuable tools for enhancing their writing skills and are actively seeking ways to incorporate them into their learning process. On the other hand, some students, like Interviewee 2, expressed a preference for using chatbots primarily for proofreading and editing, indicating a more cautious approach towards relying on AI for generating content. This highlights the importance of providing students with the autonomy to choose how they utilize AI chatbots based on their individual needs and preferences.

In conclusion, this study sheds light on the intricate relationship between AI chatbot usage and self-directed writing (SDW) among third-year EFL students. The findings reveal a statistically significant, albeit weak, positive correlation between these two variables, suggesting that students who frequently interact with AI chatbots tend to exhibit higher levels of SDW. This aligns with

previous research highlighting the positive impact of AI chatbots on language learning outcomes, particularly in providing instant feedback, personalized guidance, and opportunities for autonomous practice, all of which are crucial components of SDW. However, the study also underscores the influence of other factors on this relationship, as evidenced by the weak correlation and the non-significant moderating effects of participant-related factors. The qualitative data from interviews further enriches our understanding of how students perceive and utilize AI chatbots in their writing process, revealing both the benefits and challenges associated with their use. Overall, this study contributes to the growing body of knowledge on the role of AI in language education and provides valuable insights for educators seeking to leverage technology to foster SDW in their students.

Implications

The findings of this study have several implications for EFL writing instruction. First, they suggest that AI chatbots can be valuable tools for promoting SDL in writing, particularly for students who are already somewhat confident in their abilities and open to using technology in their learning process. However, it is important to note that the effectiveness of chatbots may vary depending on how they are used and integrated into the learning process. Educators should provide guidance and support to students on how to use chatbots effectively for SDW. This could include teaching students how to evaluate the feedback provided by chatbots, how to use chatbots for brainstorming and outlining, and how to avoid over-reliance on chatbots for generating ideas. Additionally, educators should consider incorporating chatbots into their instructional design to provide students with opportunities for self-directed practice and feedback.

Second, the findings suggest that individual differences and contextual factors may not play a significant role in determining the impact of AI chatbots on SDW. This implies that chatbots can

be beneficial for a wide range of learners, regardless of their gender, previous experience with AI, writing skills, or writing habits. However, it is important to acknowledge that individual learners may have different preferences and needs when it comes to using chatbots. Educators should therefore provide students with the flexibility to choose how and when they use chatbots to support their writing. For instance, some students may prefer to use chatbots for brainstorming and generating ideas, while others may find them more helpful for proofreading and editing. This aligns with the principles of differentiated instruction, which emphasizes tailoring instruction to meet the diverse needs of learners (Tomlinson, 2014).

Recommendations for Further Research

The findings highlight the need for further research to explore the potential negative impacts of AI chatbots on SDW, such as over-reliance and potential biases in the feedback provided. It is important to ensure that chatbots are designed and implemented in a way that promotes critical thinking, creativity, and academic integrity. Future research could also investigate the long-term effects of using AI chatbots on SDW and how they can be integrated into different writing genres and contexts. Additionally, research could explore the effectiveness of different types of AI chatbots and how they can be tailored to meet the specific needs of EFL learners at different proficiency levels. This research could inform the development of more effective and ethical AI chatbot applications for language.

General Conclusion
This research aimed to investigate the relationship between AI chatbot usage patterns and SDW among third-year EFL students. The study explored how the frequency of interaction with

chatbots correlates with students' SDL in EFL writing and identified potential mediating or moderating factors influencing this relationship. Additionally, it explored how students utilize AI chatbots for various purposes in EFL writing.

The study employed a mixed-methods approach, combining quantitative data from questionnaires with qualitative insights from interviews. The findings revealed a very weak positive correlation between AI chatbot usage and SDW, suggesting that students who use chatbots more frequently tend to exhibit higher levels of self-directedness in their writing. However, the study also found that individual differences and contextual factors, such as gender, previous experience with AI chatbots, level of satisfaction with writing skills, and frequency of writing practice outside of formal settings, did not significantly moderate this relationship.

The research also shed light on the diverse ways in which students utilize AI chatbots for different writing purposes, including vocabulary assistance, sentence structure, grammar, brainstorming, outlining, proofreading, and summarizing. While the majority of students reported positive experiences with chatbots, concerns were raised about their accuracy and potential negative impact on creativity.

Limitations of the Study

While this study makes a significant contribution to our understanding of the relationship between AI chatbot usage and SDW among EFL learners, it is important to acknowledge the limitations inherent in the research design and methodology.

AI is a new and modern domain and that makes finding enough information about it a very hard and time-consuming process, especially when the research topic contains a lot of other variables that make the research even more specific and contain a lot of areas that should be covered.

The study's reliance on self-reported data introduces the possibility of social desirability bias and other inaccuracies. Despite efforts to maintain confidentiality and anonymity, some participants may not have provided completely truthful responses or may have answered the survey without serious consideration.

Relying only on the online responses from the questionnaire will cause low response rates since not all the participants are granted to answer.

An interview would be time consuming since getting participants who agree on doing an interview especially when conducting it in a period of exams when the participants may have recalling or focusing issues and those who have enough knowledge about the topic of the interview is hard. It also takes time conducting, transcribing, and analyzing it.

The presence of the interviewers may affect the interviewees who may be sensitive which leads them to preserve their true opinions and experiences.

it would have been more desirable in our case to conduct an experiment to test for a cause-effect relationship. But we could not conduct an experiment because of some circumstances. conducting an experiment would have been highly impracticle because of the time and cost efficiency and accessibility to participants. So in our circumstances it was more suitable to use a questionnaire as our primary data collection tool.

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Appendices

Appendix A. The Questionnaire Form

Welcome and thank you for participating in this questionnaire . The aim is to investigate students' usage of Ai chatbots and their writing practices . Your insights are valuable to us. Please answer each question honestly based on your own experiences and opinions. There are no right or wrong answers. Your responses will remain confidential and will only be used for research purposes."

Demographic information

Gender

Prefer not to say ☐   Male ☐   Female ☐

Age: …….

Previous Experience with Ai Chatbots

None ☐   Limited ☐   Moderate ☐   Extensive ☐

Level of Satisfaction With your Writing Skills

Verry dissatisfied ☐   Dissatisfied ☐   Neutral ☐   Satisfied ☐   Very satisfied ☐

What Type of Writing (in English) do you primarily engage in (Select all that apply)

Academic writing (essays, research papers) ☐

Professional writing (reports, emails) ☐

Creative writing (stories, poems) ☐

Social media writing (posts, comments) ☐

Others ☐   …………………………………………………………………………..

How often do you practice writing in English outside of formal educational settings

Never ☐   Rarely ☐   Occasionally ☐   Frequently ☐   Always ☐

Self-directed learning in EFL writing

This section explores your attitudes and experiences with writing. You'll see a series of statements and we ask you to rate your level of agreement using the Likert scale provided, ranging from 'Strongly Disagree' to 'Strongly Agree.'"

	SD	D	N	A	SA
I like to write					
My writing shows a unique author's voice					
I know which problems I have in terms of writing					
I like writing without rules or restrictions					
I choose by myself how I can improve my writing					
I like writing on a computer					
I like to choose topics on which I want to write myself					
My writing displays my own opinion					
I know how to solve problems regarding my writing					
I like using language that is comfortable and natural (like spoken language) in my writing					
I know what to do in order to improve the quality of my writing					
I can find mistakes easier on the computer than when I am handwriting					
I like writing outside of the classroom or work context					
My writing impresses other people					
I like writing in the same language or dialect that I talk in					
I revise my writing repeatedly before I hand it in					
The computer makes it easy to change and edit texts					
I can communicate effectively by writing					
I am emotionally involved in my writing					
I like learning about new ways of writing (writing conventions)					
I know how I learned (and still learn) how to write					
I know how to look for information on the computer and use it in my writing					
I like to write on matters that I care for					
I follow a specific process when I write					
I can easily, when writing, solve problems on the computer					

Frequency of interaction with Ai chatbots

This section asks about your frequency of interaction with AI chatbots for various writing-related tasks. 'Interaction' here means working together with the AI's advice to refine your writing, not just copying its text. Please indicate how often you engage in each activity listed, from 'Never' to 'Always'

	Never	Rarely	Sometimes	Often	Always
Help with vocabulary					
Help with sentence structure					
Help with punctuation					
Help with spelling					
Help with writing style					
Help with grammar					
Brainstorming topics or generating ideas					
Help with outlining or structuring arguments					
Help with developing supporting details and evidence					
Proofreading for clarity and coherence					
Personalized feedback					
getting feedback on overall writing style					
proofreading for clarity and coherence					
identifying areas for improvement in content					
Receiving suggestions for word choice and sentence flow					
Evaluating the effectiveness of the writing					
Translating text					
Summarizing					
Paraphrasing					
Help providing exercises or practice					
Personal/emotional support					

How often do you use Ai chatbots to do the writing for you (you do not edit or change the ai-generated response)

Never ☐

Rarely ☐

Sometimes ☐

Often ☐

Always ☐

Appendix B. The Interview Script

Introduction:

Thank you for participating in this interview. Today, we'll discuss your experiences with writing in English and your interactions with AI chatbots. Your insights will be extremely valuable for us

Section One: Demographic Information

1- Introduce your self (age, gender, name)

2- How often do you engage in writing activities?

3- Have you used AI chatbots before? Can you tell me about it?

Section Two: Self-Directed Learning in EFL Writing

"Now, I'd like to ask you some questions about your writing process and preferences. Please feel free to elaborate on your answers."

1- What motivates you to write, and do you enjoy the process?

2- In your opinion, what makes a writer's voice unique, and how do you find yours in your writing?

3- Are you aware of any particular challenges you face in writing? How do you identify and address them?

4- How do you approach improving your writing skills? Do you have a strategy or methods you prefer?

5- What are your thoughts on writing with or without rules and restrictions?

6- Do you prefer writing on a computer (or any technological device you can write on) ? If so, why?

7- How important is it for you to choose your own writing topics?

8- How do you ensure that your writing reflects your personal opinions and perspectives?

9- Can you describe a time when you successfully solved a problem related to your writing?

10- Do you find it easier to spot mistakes when writing on a computer (or any technological device you can write on) compared to handwriting?

Section Three: Frequency of Interaction with AI Chatbots

"Let's shift our focus to your use of AI chatbots in writing."

1- How often do you turn to AI chatbots for assistance with vocabulary, sentence structure, or other writing elements?

2- Could you share an experience where an AI chatbot helped you brainstorm or structure your writing?

3- Have you ever used an AI chatbot to proofread your work? What was the outcome?

4- How AI chatbots could be improved to assist writers more effectively

5- How frequently do you rely on AI chatbots to write something for you without making any edits?

6- Lastly, I'd love to hear any additional thoughts or experiences you have regarding the use of AI chatbots for writing in English.

Conclusion:

"Thank you for sharing your experiences and thoughts with me. Your input is incredibly valuable and will contribute greatly to our research."

Résumé

L'Université Echahid Cheikh Larbi Tebessi est confrontée au défi d'équiper les apprenants de l'anglais comme langue étrangère de compétences efficaces en écriture. Les étudiants de troisième

année en anglais comme langue étrangère dans cette université se trouvent à une étape critique où ils doivent approfondir leurs compétences linguistiques et cultiver une plus grande autonomie dans leurs processus d'apprentissage. Cette étude examine la relation entre les modes d'utilisation des chatbots d'intelligence artificielle (IA) et l'écriture autodirigée (EAD) chez les étudiants de troisième année en anglais langue étrangère (ELé) à l'Université de Tébessa. Elle vise à comprendre comment la fréquence d'interaction avec les chatbots est corrélée à l'apprentissage autodirigé des étudiants en écriture ELF, à identifier tout effet modérateur potentiel de facteurs liés aux étudiants (sexe, expérience préalable des chatbots IA, satisfaction à l'égard des compétences en écriture et fréquence de la pratique de l'écriture en dehors des contextes formels,(et à explorer comment les étudiants utilisent les chatbots IA à différentes fins dans l'écriture ELé. Une approche mixte a été employée, impliquant un questionnaire et des entretiens avec 104 participants. Les résultats ont révélé une faible corrélation positive entre l'utilisation des chatbots IA et l'EAD, suggérant que les étudiants qui utilisent les chatbots plus fréquemment ont tendance à présenter des niveaux plus élevés d'auto-direction dans leur écriture. Cependant, les facteurs modérateurs n'ont pas influencé de manière significative cette relation. L'étude a également révélé que les étudiants utilisent les chatbots IA à diverses fins, notamment l'aide au vocabulaire, la structure des phrases, la grammaire, brainstorming, la rédaction de plans, la relecture et le résumé. Bien que la plupart des étudiants aient fait état d'expériences positives, des préoccupations ont été soulevées quant à l'exactitude et aux impacts négatifs potentiels sur la créativité. L'étude conclut que les chatbots IA peuvent être des outils précieux pour promouvoir l'apprentissage autodirigé dans l'écriture ELé, mais leur utilisation doit être soigneusement envisagée et intégrée à l'enseignement afin de maximiser les avantages et de remédier aux limitations potentielles.

Mot clés: Intelligence Artificielle, Chatbots, Apprentissage autodirigé, Écriture en anglais langue étrangère, Apprentissage des langues.

الملخص

جامعة الشهيد الشيخ العربي التبسي تواجه تحدي تزويد متعلمي اللغة الإنجليزية كلغة أجنبية بمهارات الكتابة الفعالة. طلاب السنة

الثالثة في تخصص اللغة الإنجليزية كلغة أجنبية في هذه الجامعة يمرون بمرحلة حرجة حيث يتوقع منهم تعميق مهاراتهم اللغوية

وزرع الاستقلالية الأكبر في عمليات تعلمهم. تستكشف هذه الدراسة العلاقة بين أنماط استخدام روبوتات الدردشة بالذكاء

الاصطناعي (AI) والكتابة الموجهة ذاتيًا بين طلاب السنة الثالثة الذين يدرسون اللغة الإنجليزية كلغة أجنبية في جامعة تبسة.

وتهدف إلى فهم كيفية ارتباط وتيرة التفاعل مع روبوتات الدردشة بالتعلم الذاتي للطلاب في كتابة اللغة الإنجليزية كلغة أجنبية،

وتحديد أي تأثيرات محتملة لعوامل متعلقة بالطالب (الجنس، والخبرة السابقة في استخدام روبوتات الدردشة بالذكاء الاصطناعي، والرضا عن مهارات الكتابة، وتكرار ممارسة الكتابة خارج الإعدادات الرسمية)، واستكشاف كيفية استخدام الطلاب لروبوتات الدردشة بالذكاء الاصطناعي لأغراض مختلفة في كتابة اللغة الإنجليزية كلغة أجنبية. وقد تم استخدام نهج مختلط للأساليب، بما في ذلك استبيان ومقابلات مع 104 مشاركًا. وكشفت النتائج عن وجود علاقة إيجابية ضعيفة بين استخدام روبوتات الدردشة بالذكاء الاصطناعي والكتابة الموجهة ذاتيًا، مما يشير إلى أن الطلاب الذين يستخدمون روبوتات الدردشة بشكل متكرر يميلون إلى إظهار مستويات أعلى من التوجيه الذاتي في كتاباتهم. ومع ذلك، لم تؤثر العوامل المعتدلة بشكل كبير على هذه العلاقة. ووجدت الدراسة أيضًا أن الطلاب يستخدمون روبوتات الدردشة بالذكاء الاصطناعي لأغراض مختلفة، بما في ذلك مساعدة المفردات وبنية الجملة والقواعد والعصف الذهني والتخطيط والتصحيح والتدقيق اللغوي والتلخيص. وبينما أبلغ معظم الطلاب عن تجارب إيجابية، فقد أثيرت مخاوف بشأن الدقة والتأثيرات السلبية المحتملة على الإبداع. وتخلص الدراسة إلى أن روبوتات الدردشة بالذكاء الاصطناعي يمكن أن تكون أدوات قيمة لتعزيز التعلم الذاتي في كتابة اللغة الإنجليزية كلغة أجنبية، ولكن يجب النظر بعناية في استخدامها وإدماجها في التعليم لتعظيم الفوائد ومعالجة القيود المحتملة.

الكلمات المفتاحية : الذكاء الاصطناعي, روبوتات الدردشة, التعلم الذاتي, كتابة اللغة الإنجليزية كلغة أجنبية, تعلم اللغة.