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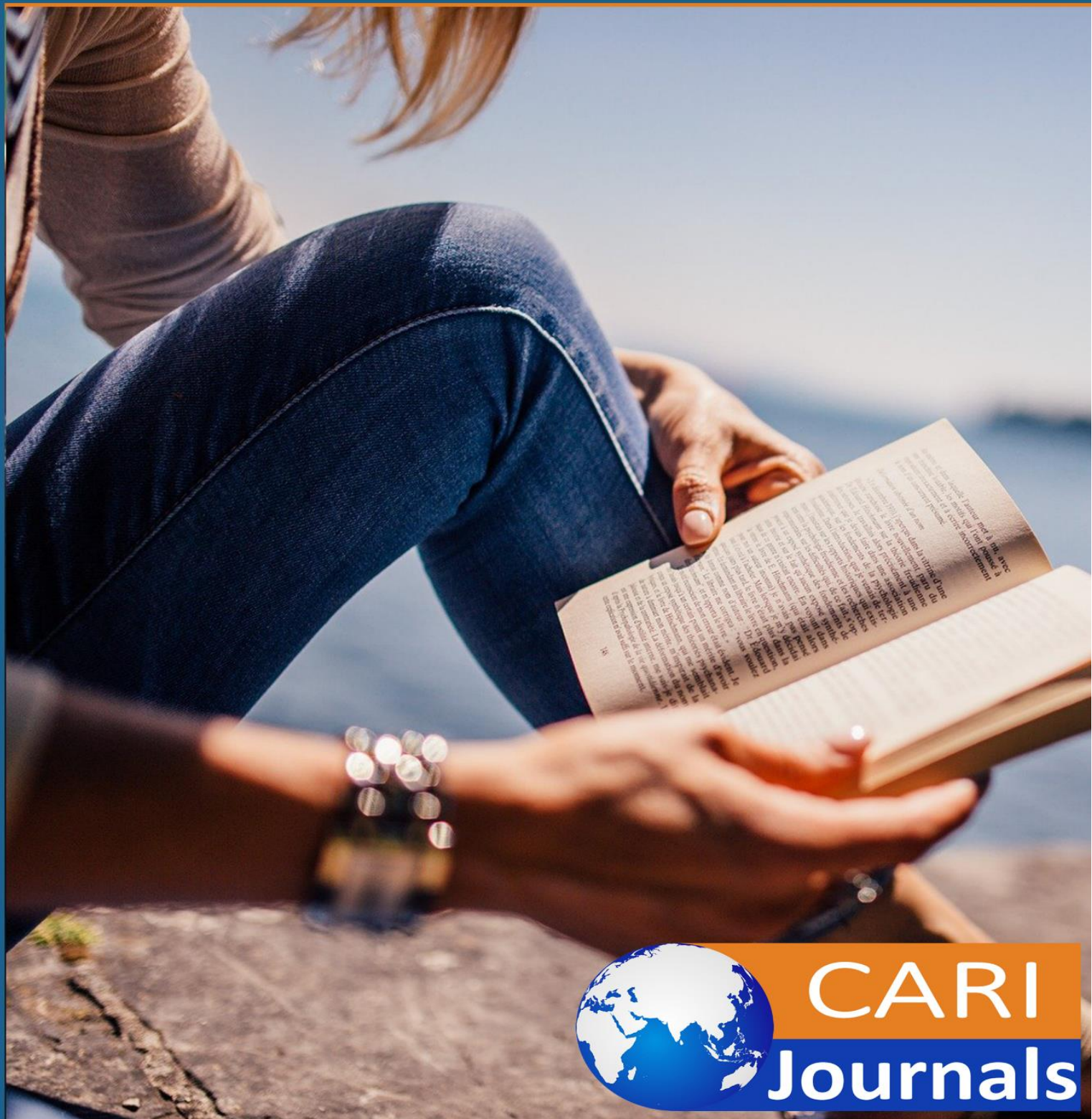

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Utilizing Computer and Technological Devices to Improve the Performance of English as a Foreign Language (EFL) Students: A Case Study of Secondary Schools in Al-Hasaheisa Locality, Gezira State, Sudan

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Abstract

Purpose: This study aims to examine the impact of technology integration in English as a Foreign Language (EFL) classes on learners' motivation and performance. It also seeks to provide training for EFL teachers to effectively incorporate technology into their instructional practices.

Methodology: The research utilizes experimental and descriptive-analytical methods, involving 75 participants, including EFL students and teachers from secondary schools in Al-Hasaheisa Locality, Gezira State, Sudan. Data collection involves questionnaires and pre-post-tests administered to both teachers and students. The collected data is analyzed using the SPSS program.

Findings: The study reveals that the use of technology in EFL classes facilitates English language teaching and learning. Despite the high internet costs in Sudan, EFL students actively engage in online collaboration activities. However, it is highlighted that nearly half of the EFL teachers lack sufficient training to effectively utilize the available computers and technological devices. The study emphasizes that EFL students display motivation to learn through computer usage, both inside and outside the classroom. Additionally, technology enables EFL learners to engage in computer-based assignments, practice problem-solving and critical thinking through e-activities, and improve their overall performance. Furthermore, utilizing technology allows teachers to provide a broader range of materials and information.

Unique Contributions to Theory, Policy and Practice: The study recommends the integration of information and communication technology (ICT) in the EFL teaching and learning process. It emphasizes the need for comprehensive training programs to enhance EFL teachers' proficiency in effectively employing technology in their instructional practices.

Keywords: *EFL Performance, Digital Learning Tools, Computer-Assisted Language Learning, Technology Integration, Educational Technology, Secondary Education.*

1.0 Introduction

Utilizing modern technology in English as a Foreign Language (EFL) classes has been found to significantly enhance the teaching and learning process while increasing the motivation of EFL learners to acquire proficiency in the English language (Golshan & Tafazoli, 2014; Peng et al., 2024). According to Lee (2021), modern devices play a crucial role in facilitating knowledge acquisition. Moreover, the use of modern media aids learners in acquiring knowledge and experiences. By integrating modern technology, EFL learners' communicative skills are improved, enabling successful interaction with instructors and peers through the internet (Golshan & Tafazoli, 2014; Liu et al., 2024; Yang & Chen, 2007). This technology not only promotes collaboration and constructive knowledge interaction among learners but also facilitates engagement in authentic tasks, exploration of alternative solutions, and increased interaction (Lee & Liang, 2012; Li et al., 2019). Additionally, computer technology tools, such as Information and Communication Technology (ICT), provide EFL learners with access to the web, ready practice materials, related instructions, and diverse learning activities, allowing them to explore different solutions and achieve intended learning outcomes and objectives (Mohamadi, 2018).

However, in Sudanese educational institutions, EFL students often lack motivation to learn the English language through traditional teaching methods. The proficient utilization of modern teaching techniques in EFL teaching and learning is not widespread, and many EFL teachers lack adequate training in effectively integrating technological devices into their instructional practices. This study aims to address these challenges by utilizing technology in EFL teaching instructions to enhance student motivation and proficiency in the English language. The study also aims to provide information for EFL teachers on the utilization of ICT in EFL teaching practices. To achieve these goals, the study seeks to answer the following research questions: To what extent does the use of ICT motivate EFL learners to engage in language learning? To what extent are EFL teachers trained in utilizing ICT in teaching EFL students?

This research highlights significant roles of technology in enhancing the methodology of teaching in EFL classes. It also highlights how technology plays a crucial role in increasing EFL students' motivation to learn the English language. Furthermore, the study emphasizes the importance of training EFL teachers to effectively utilize modern technology in their instructional practices. Therefore, this study holds great significance for EFL teachers, students, and syllabus designers alike.

2.0 Literature Review

Integrating computer technology into English as a Foreign Language (EFL) classes has shown to have a profound impact on students' engagement in authentic tasks and their level of interaction within the classroom setting (Palungtepin, 2021; Zhang et al., 2021). The utilization of technology not only enhances the learning experience but also saves valuable class time, as mentioned by Yudintseva, (2023). By incorporating technology, students are motivated in a learner-centered classroom where they actively participate in their own learning journey.

Mohamadi, (2018) reported a pretest/posttest time series design to examine the three assessment interventions on the writing performances of the participants. The interventions include online summative assessment, online portfolio writing assessment conducted individually, and online collaborative formative assessment. Data were collected from students' individual writing in both online summative and portfolio formative assessments, as well as collaborative writing in the online collaborative formative assessment. The writing performances are assessed using the International English Language Testing System (IELTS) rating scale. The study employs paired sample t-test and analysis of covariance to analyze the data. The study reveals that all three interventions lead to improved writing ability among EFL students. However, the highest significant enhancement in writing ability is observed in the online collaborative writing assessment intervention. This suggests that using engaging technology and techniques, along with appropriate assessment strategies, can greatly enhance the efficiency of learning among EFL students.

Jeon et al. (2023) employed a systematic review methodology to analyze 37 empirical studies on speech-recognition chatbots for language learning. The researchers conduct a comprehensive analysis of the literature to identify and categorize different types of chatbots. The methodology ensures a rigorous and systematic approach to gathering and analyzing relevant research. The findings offer specific insights into the design and development of chatbots for language learning and contributes to the understanding of chatbot technology and its potential benefits in educational settings.

Nazari et al. (2021) examine the efficacy of an Artificial Intelligence (AI) powered digital writing assistant in improving the learning behavior and attitude of English second postgraduate students in the English academic writing context. The study utilized a randomized controlled trial design. A total of 120 students were randomly allocated to either the equipped AI group or the non-equipped AI group. The equipped AI group received intervention using the AI-powered writing tool, while the non-equipped AI group did not. The researchers employed parametric tests of analyzing covariance to analyze the data and determine the effectiveness of the intervention. The study adhered to rigorous research standards and ensured random allocation of participants to the intervention and control groups, enhancing the methodological quality of the research. The results of the study demonstrated that students who participated in the AI intervention group showed statistically significant improvement in various aspects, including behavioral engagement, emotional engagement, cognitive engagement, self-efficacy for writing, positive emotions, and negative emotions, compared to the non-equipped AI group. These findings suggest that AI-powered writing tools can be an efficient tool to promote learning behavior and attitudinal technology acceptance among non-native postgraduate students in English academic writing. The study highlights the potential benefits of integrating AI technology in higher education to enhance student engagement and learning outcomes.

Bozdoğan, (2015), reviewed the current trends in Mobile-Assisted Language Learning (MALL) and identified the pedagogical implications for language education. The research question is

focused on preparing, planning, designing, and integrating a mobile learning-based pedagogical framework. The findings of the study reveal a skill-based language learning orientation in MALL, with an emphasis on vocabulary and listening. Other important factors identified include student perspectives, intention, acceptance, and readiness to use new mobile technologies. The study also highlights the integration of social media, the link to language acquisition, and the design of mobile applications as new additions to MALL research.

Ranalli, (2021) investigated the extent to which engagement supports learning from, and is influenced by, trust in automated writing evaluation (AWE) feedback. The research question is how L2 student engagement with AWE feedback can support learning and be influenced by trust in AWE tools. The study utilizes a multiple-case study design to gather data from six Mandarin L1 university students at different levels of English writing instruction. The participants provided a text they had written for a current course, which was then submitted to the AWE tool Grammarly for feedback. Screen-capture recordings, stimulated recalls, and interviews were used to collect information on the participants' engagement with the feedback. The methodology employed in the study ensures a rigorous investigation of the research question. The findings of the study show that L2 student engagement with AWE feedback is influenced by individual and contextual factors. Participants adopted a proofreading orientation towards the feedback, possibly due to the specific corrections provided by Grammarly. The study also highlights the importance of trust in AWE tools, as different dimensions of trust were found to be determining factors in engagement with the feedback. These findings have implications for L2 students, teachers, and developers of AWE tools, as they provide insights into how to make more effective use of these tools for learning.

Furthermore, the use of technology in EFL classes allows students to explore more advanced learning opportunities based on their individual interests (Yang et al., 2023). Educational computers, in particular, play a significant role in facilitating collaboration among students and providing them with access to a wide range of rich learning resources, as highlighted by Bonk and Cunningham (1998, p.27);

> *"The blending of technological and pedagogical advancements has elevated the importance of research on electronic learner dialogue, text conferencing, information sharing, and other forms of collaboration"*

In essence, the integration of computer technology in EFL classes promotes an interactive and dynamic learning environment (Hung et al., 2018; Jeon et al., 2023; Pikhart, 2021; Wu, 2015; Yaghoobi & Razmjoo, 2016; Zaini & Mazdayasna, 2014; Zhang et al., 2021). It encourages students to actively participate in authentic tasks, fostering their engagement and motivation. By leveraging educational computers, students have the opportunity to collaborate with their peers and access a wealth of valuable learning resources, enabling them to personalize their learning experiences and explore more advanced concepts (Alfadil, 2020; Hsu, 2017; Lin et al., 2020; Pikhart, 2020; Reynolds & Anderson, 2015).

However, the utilization of technology in the classroom setting provides students with a unique opportunity to actively engage in the target language and foster cross-cultural communication, the importance of incorporating machine learning and deep learning strategies into apps to enhance human-computer interaction. as highlighted by Pikhart, (2021). These findings have implications for the development and improvement of mobile learning platforms in the field of foreign language education. The use of the internet, in particular, offers numerous advantages to students, such as the ability to connect with others globally and the convenience of avoiding the need to travel to distant locations (Peng et al., 2024).

Moreover, in the context of advancing scientific knowledge, modern education must adapt to keep up with the rapid pace of progress. It is argued that learners who actively engage in online tasks demonstrate greater proficiency compared to those who solely rely on traditional learning methods (Yousefi, 2014). The utilization of technology in the learning process allows students to access a wide range of resources and interactive tools that enhance their learning experience and enable them to develop critical skills necessary for success in the modern world (Alfadil, 2020; Chen-Hsieh et al., 2017; Zhao et al., 2024).

In summary, incorporating technology into the classroom environment provides students with opportunities to engage in meaningful interactions in the target language and fosters cross-cultural communication. The use of the internet not only saves time and resources but also connects learners to a global community. Furthermore, modern education must adapt to the ever-evolving scientific landscape, and leveraging technology in the learning process allows students to enhance their learning outcomes and acquire essential skills for success in the digital age.

3.0 Participants, Material and Method

The participants involved in this research consisted of both EFL students and teachers from Sudan. The study employed a descriptive-analytical method to gather and analyze data. The target population for this research included EFL teachers and learners in secondary schools located in Hasahisa Locality. The data collection process involves the implementation of questionnaires and pre-post-tests. Specifically, a questionnaire is administered to 25 EFL teachers, while another questionnaire and pre-post-test are conducted with 50 students. In order to collect data that aligned with the objectives of the study, two instruments were utilized: questionnaires and pre-post-tests. The first instrument, a questionnaire, was administered to the 50 students, while the second questionnaire was distributed among the 25 EFL teachers. Additionally, pre-tests were conducted prior to the implementation of any interventions, and post-tests were conducted after the intervention period. By utilizing these instruments, the study aimed to gather comprehensive and relevant data to address the research questions effectively.

To analyze the collected data, the researchers employed the Statistical Package for the Social Sciences (SPSS) program. This software facilitated the organization and statistical analysis of the data, allowing for a deeper understanding of the patterns, relationships, and trends that emerged from the study. By employing a rigorous data analysis approach, the researchers were able to draw

meaningful and reliable conclusions based on the findings of the study. Through the administration of questionnaires and pre-post-tests, the researchers gathered valuable data to support their research objectives. The SPSS program was then utilized to analyze the collected data, enabling the researchers to draw insightful conclusions from their findings.

4.0 Data Analysis and Discussion

The statistical analysis of the data collected from the two questionnaires and two tests is presented in tables. These tables provide a comprehensive overview and detailed examination of the findings obtained through the analysis of the collected data. Analyzing the data collected from the questionnaires and tests and presenting the results in these tables, the study provides a clear and concise representation of the statistical findings. These findings contribute to a deeper understanding of the research objectives and provide valuable insights into the impact of the interventions on the students' and teachers' perceptions and performance in the EFL context.

4.1 Unveiling Student Motivation: Insights from a Questionnaire Survey

Statement 1: "I am motivated to use a computer in and out the classroom."

This is about harnessing motivation and exploring students' enthusiasm for computer usage inside and outside the classroom

Table 1: Students' Enthusiasm for Computer Usage in the Classroom

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.0	2.0	2.0
	Neutral	1	2.0	2.0	4.0
	Agree	48	96.0	96.0	100.0
	Total	50	100.0	100.0	

The statistical analysis in table 1, shows that the majority of the sample (96%) agree that they are motivated when using computers for learning. Only (2%) are neutral and (2%) disagree. The statement is accepted.

Statement 2: "I used my computer to perform my daily/weekly assignments to support my learning skills."

Table 2: Using a computer to perform daily/weekly assignments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	4	8.0	8.0	8.0
	Agree	46	92.0	92.0	100.0
	Total	50	100.0	100.0	

The statistical analysis in Table (2) indicates that (92%), of the sample agree or even strongly agree that they do their assignments on computer-related tasks that support their skills and abilities. Only (8%) of the sample is neutral. Thus, the statement is justified.

Statement 3: "I seek out e-activities that promote problem-solving and critical thinking."

Table 3: Seeking out e-activities that promote problem-solving

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	2.0	2.0	2.0
	Neutral	2	4.0	4.0	6.0
	Agree	47	94.0	94.0	100.0
	Total	50	100.0	100.0	

The statistical analysis in Table (3) shows that the majority of respondents (94%) agree that they seek out e-activities that promote problem-solving and critical thinking using the classroom computer(s). (4) of the sample are neutral and (2%) disagree. The statement is justified.

Statement 4: "I practice computer-related activities in my free time to improve my basic skills."

Table 4: Students practice electronic activities to improve their basic skills

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	4.0	4.0	4.0
	Neutral	3	6.0	6.0	10.0
	Agree	45	90.0	90.0	100.0
	Total	50	100.0	100.0	

Table (6), indicates that a majority of (90%) of students agree on the usefulness of doing related activities through which students could improve their basic skills. Only (6%) are neutral and (4 %) of the sample disagree. The statement is proved

Statement 5: "Students participate actively in online collaboration activities."

Table 5: Participating in online collaborative activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	4.0	4.0	4.0
	Neutral	2	4.0	4.0	8.0
	Agree	46	92.0	92.0	100.0
	Total	50	100.0	100.0	

The data in Table (5), indicates that (92%) of the respondents agree or even strongly agree to the usefulness of participating in online collaboration. Whereas only (4%) are neutral and (4%) disagree with the statement. The statement is accepted.

Statement 6: "The use of technology helps me to improve my performance."

Table 6: Technology Improves students' performance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	6.0	6.0	6.0
	Neutral	2	4.0	4.0	10.0
	Agree	45	90.0	90.0	100.0
	Total	50	100.0	100.0	

The statistical analysis in table (6), shows that (90%) of the students agree that the use of technology helped in improving their performance. Nonetheless, (4%) are neutral and (6%) of the sample disagree with the statement. The statement is proved.

4.2 Unveiling Insights: Analyzing the Teachers' Questionnaire

Statement 1: "Technological devices are available in the schools."

Table 7: Availability of technology in schools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	8.0	8.0	8.0
	Neutral	3	12.0	12.0	20.0
	Agree	20	80.0	80.0	100.0
	Total	25	100.0	100.0	

The statistical analysis in Table (7) shows that the majority of teachers, i.e., (80%) agree that technological devices are available in their schools (12%) of the sample are neutral and (8%) disagree. The statement is justified.

Statement 2: "The use of technology in teaching facilitates learning materials."

Table 8: Technological devices facilitate learning material

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	4.0	4.0	4.0
	Neutral	1	4.0	4.0	8.0
	Agree	23	92.0	92.0	100.0
	Total	25	100.0	100.0	

The statistical analysis of data in table (8) shows that most of the respondents (92%) agree that involving technology in teaching facilitates learning materials. Only (4%) of the sample are neutral and (4%) disagree, so the statement is justified.

Statement 3: "Using technology helps teachers to collect teaching materials more easily."

Table 9: Using technology helps teacher to collect teaching materials easily

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	25	100.0	100.0	100.0

The statistical analysis of the data in Table (9), indicates that the whole of the sample (100%) agree that using technology saves time and helps teachers to perform better and deliver more materials and information. The statement is justified.

Statement 4: "Most EFL teachers don't have the required knowledge of how to use information technology in EFL teaching classes."

Table 10: Most EFL teachers don't have the required knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	3	12.0	12.0	12.0
	Agree	22	88.0	88.0	100.0
	Total	25	100.0	100.0	

The statistical analysis of the data in Table (10), indicates that (88%) of the sample agree that most EFL teachers don't have the required training and knowledge of how to use information technology in ELT teaching classes. 12% of the sample is neutral. The statement is justified.

Statement 5: "Many Sudanese EFL teachers are still using traditional methods in teaching EFL."

Table 11: Many Sudanese EFL teachers are still using traditional methods

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	8.0	8.0	8.0
	Neutral	2	8.0	8.0	16.0
	Agree	21	84.0	84.0	100.0
	Total	25	100.0	100.0	

The statistical analysis of the data in Table (11) indicates that (84%) of the sample agree that, most EFL teachers are still using traditional methods in teaching the English language. However, (8%) of the sample are neutral, and (8%) disagree with the statement.

Statement 6: "ICTs can be harmful to EFL learners if not carefully filtered."

Table 12: ICTs can be harmful to EFL learners

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	3	6.0	6.0	6.0
	Agree	47	94.0	94.0	100.0
	Total	50	100.0	100.0	

The statistical analysis of the data in Table (12) indicates that (94%) of the sample agree that ICTs can be harmful to EFL learners if not carefully filtered. However, (6%) of the sample are neutral with the statement.

4.3 Analysis of the Pre-test and Post-test

The pre-test and post-test results were found significant compared to the pre and post-test (P= 0.010). With this result, it can be technology has a significant positive effect on enhancing EFL students' language skills. See Table 13, Group statistics of control and experimental groups

Table 13: Total Results of the two Parts of the Test

Section	**Pre-test**				**Post-test**			
Result	Pass	%	Fail	%	Pass	%	Fail	%
Students	24	48 %	26	52 %	35	70 %	15	30 %
Total	50	100%	0	100%	0	100%	0	100%

4.4 Discussion

Upon critically analyzing and interpreting the data presented in section 3, several key insights can be gleaned from Tables 1 to 13. These tables provide quantitative information on various aspects related to students' enthusiasm for computer usage in the classroom, their engagement with technology, and the perceptions of teachers and students towards the use of technology in education. Table 1, reveals that out of the total respondents, only 2% disagreed, 2% were neutral, and a significant majority of 96% agreed with the statement regarding their enthusiasm for computer usage in the classroom. This suggests a strong positive inclination towards using computers among students (Zhang et al., 2021). Table 2, indicates that 8% of the students were neutral, while 92% agreed with using computers for daily/weekly assignments. This demonstrates a high level of acceptance and recognition of the benefits associated with incorporating technology into their regular academic tasks (Liu et al., 2024). Table 3, highlights that a small proportion (2%) disagreed, while 47% agreed with seeking out e-activities that promote problem-solving. This indicates a positive inclination towards using electronic activities to enhance problem-solving skills among students as emphasized by Gheytasi et al. (2015). Table 4, demonstrates that 4% disagreed, 3% were neutral, and 45% agreed with the practice of electronic activities to improve their basic skills. This suggests a positive perception among students regarding the effectiveness of electronic activities for skill enhancement (Lee & Liang, 2012).

Table 5, reveals that 4% disagreed, 2% were neutral, and 46% agreed with participating in online collaborative activities. This signifies a general acceptance and willingness among students to engage in collaborative work through online platforms (Yang et al., 2023). Table 6, shows that 6% disagreed, 2% were neutral, and 45% agreed with the perception that technology improves students' performance. This indicates a predominantly positive belief among students regarding the positive impact of technology on their academic performance (Li et al., 2019; Yang & Chen, 2007). Table 7, indicates that 8% disagreed, 12% were neutral, and 80% agreed with the availability of technology in schools. This suggests that the majority of students perceive that technology is adequately accessible in their educational institutions (Yousefi, 2014). Table 8, reveals that 4% disagreed, 4% were neutral, and 23% agreed with the notion that technological devices facilitate learning material. This implies that a significant proportion of students recognize the value of technological devices in aiding their learning process (Lin et al., 2020). Table 9, shows that 100%

of the respondents agreed that using technology helps teachers collect teaching materials easily. This indicates a unanimous recognition of the benefits of technology in facilitating teachers' access to teaching resources (Abubakir & Alshaboul, 2023; Yaghoobi & Razmjoo, 2016).

Table 10 demonstrates that 12% were neutral, while 88% agreed that most EFL (English as a Foreign Language) teachers lack the required knowledge. This suggests a prevalent belief among students that their English language teachers need further development in terms of knowledge and skills (Abubakir & Alshaboul, 2023; Pikhart & Al-Obaydi, 2023; Sun & Wang, 2020; Zhao et al., 2024). Table 11, reveals that 8% disagreed, 8% were neutral, and 84% agreed that many Sudanese EFL teachers still use traditional teaching methods. This implies that a significant majority of students perceive a reliance on traditional teaching approaches among their English language teachers (Yousefi, 2014). Table 12, indicates that 6% were neutral, while 94% agreed that ICTs (Information and Communication Technologies) can be harmful to EFL learners. This suggests a prevailing concern among students regarding the potential negative impact of ICTs on their English language learning experience (Pikhart & Al-Obaydi, 2023). Table 13, presents the results of the pre-test and post-test sections of the test. The data shows that 48% of students passed the pre-test, while 52% failed. In the post-test, 70% passed, while 30% failed. This indicates a notable improvement in students' performance after the intervention or instructional period and supported in a study by Mohamadi, (2018).

In conclusion, the data reflects a generally positive attitude towards the use of technology in education among students and validates the research objective of the study. It also sheds light on the perceived need for further development among English language teachers and raises concerns about the potential drawbacks of ICTs in language learning. These findings provide valuable insights for educators, policymakers, and researchers to understand students' perspectives and make informed decisions regarding the integration of technology in educational settings.

5.0 Conclusion and Recommendation

5.1 Conclusion

The purpose of the study was to examine the impact of technology integration on student performance in English as a Foreign Language (EFL) classes and highlight the importance of incorporating technology in EFL teaching. The key findings of the study indicate that technology use in EFL classes facilitates language teaching and learning, despite the challenges of high internet costs. However, it was highlighted that teachers require further training to effectively utilize available technological resources. EFL students showed increased motivation and engagement when technology was integrated into their learning activities. Additionally, technology usage enhanced problem-solving and critical thinking skills, resulting in improved overall performance. The study concludes that incorporating technology in EFL teaching can lead to positive outcomes for both students and teachers, providing access to a wide range of materials and creating an interactive learning environment.

5.2 Recommendations

Based on the findings, it is recommended to extensively utilize computers and technological devices in EFL classes to enhance the teaching and learning process. This integration of technology can create a more interactive, engaging, and effective educational experience for students. Furthermore, comprehensive training programs should be provided to instructors to effectively incorporate technology into their teaching practices. Equipping teachers with the necessary skills and knowledge will allow them to leverage technology to its full potential and create impactful learning opportunities. By implementing these recommendations, educators and policymakers can tap into the transformative potential of technology in EFL classrooms, benefiting English language teaching and learning while preparing students for success in the digital age. The study serves as a call to action, urging stakeholders to embrace technology as a catalyst for educational advancement and innovation in Sudanese EFL classrooms.

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