

**ENHANCING EFL LEARNERS' LANGUAGE PROFICIENCY AND LEARNING SKILLS
THROUGH ICT-INTEGRATED INSTRUCTION: A MIXED-METHOD EXPERIMENTAL STUDY**

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Abstract: *Information and Communication Technologies (ICT) have become an integral component of modern education, offering innovative opportunities to enhance language learning. However, empirical evidence on the effectiveness of ICT-based instruction in improving both language proficiency and learning a skill in small classroom contexts remains limited. This study investigates the impact of ICT-integrated teaching on English as a Foreign Language (EFL) learners' language development, engagement, and autonomous learning skills. A mixed-method experimental design was employed with twelve secondary school students over a fourteen-week intervention period. Participants received ICT-supported instruction using digital tools such as Google Classroom, multimedia resources, interactive quizzes, and collaborative online tasks. Pre- and post-tests were administered to measure language proficiency gains, while questionnaires and interviews explored students' perceptions and learning behaviors. Quantitative results indicated measurable improvements in test scores, while qualitative findings revealed increased motivation, participation, and learner autonomy. The findings suggest that ICT integration can positively influence both linguistic outcomes and learning processes, even in small-scale educational settings. The study provides practical implications for English language teachers seeking to incorporate technology effectively into their classrooms.*

Keywords: *ICT integration, EFL learners, language proficiency, learning skills, digital tools, experimental study*

INTRODUCTION

The rapid development of digital technologies has significantly transformed educational practices worldwide. In English language teaching, Information and Communication Technologies (ICT) provide diverse opportunities to create interactive, learner-centered, and engaging learning environments. Digital tools such as multimedia presentations, online platforms, mobile applications, and collaborative software allow teachers to move beyond traditional textbook-based instruction and promote active student participation.

Despite these advantages, many EFL classrooms still rely on conventional teaching methods that limit students' engagement and autonomy. Learners often become passive recipients of knowledge rather than active constructors of meaning. As a result, language

proficiency development may be slow, and essential learning skills such as critical thinking, collaboration, and self-regulated learning remain underdeveloped. Integrating ICT into classroom instruction has been suggested as a potential solution to these challenges.

Previous studies have demonstrated that technology-enhanced learning can improve students' motivation, interaction, and academic performance. However, most research has focused either on technological tools or on language outcomes separately. Few studies have examined how ICT simultaneously contributes to both language proficiency and broader learning skills, particularly in small-scale classroom contexts where resources and participant numbers are limited. This gap highlights the need for empirical investigation into the effectiveness of ICT integration in authentic teaching environments.

Therefore, this study aims to explore the impact of ICT-based instruction on learners' language development and learning skills through an experimental approach. Specifically, it seeks to measure changes in students' proficiency levels and examine their perceptions of motivation, engagement, and autonomy after a fourteen-week ICT-supported intervention. The findings are expected to provide practical insights for English language teachers and contribute to the growing body of research on digital pedagogy in EFL education.

LITERATURE REVIEW

The rapid advancement of Information and Communication Technologies (ICT) has substantially transformed educational practices across the globe. In recent decades, digital technologies have reshaped how knowledge is delivered, accessed, and constructed, leading to significant changes in teaching methodologies and learning environments. In the field of English language teaching (ELT), ICT has emerged as a powerful pedagogical tool capable of enhancing learners' linguistic competence, engagement, and autonomy. As a result, technology integration has become a central focus in contemporary language education research.

ICT encompasses a wide range of tools, including multimedia resources, online learning platforms, mobile applications, virtual classrooms, interactive quizzes, and collaborative software. These tools enable teachers to design more dynamic and student-centered lessons compared to traditional textbook-based instruction. According to numerous scholars, technology-enhanced environments promote authentic communication, immediate feedback, and multimodal learning experiences, which are essential for effective language acquisition. Digital tools also provide learners with access to diverse input sources such as videos, podcasts, and online texts, thereby supporting the development of listening, speaking, reading, and writing skills simultaneously.

One of the major advantages of ICT integration in language classrooms is its potential to increase learner motivation and participation. Traditional teacher-centered approaches often limit students' interaction and reduce opportunities for meaningful communication. In contrast, technology-supported instruction encourages active involvement through games, quizzes, simulations, and collaborative tasks. Researchers have found that students

demonstrate higher levels of interest and confidence when digital tools are incorporated into lessons. Increased motivation, in turn, positively influences language achievement and long-term retention.

Another important benefit highlighted in the literature is the promotion of learner autonomy. Modern educational paradigms emphasize the importance of self-regulated learning, where students take responsibility for their own progress. ICT tools facilitate independent learning by allowing learners to access materials anytime and anywhere. Online platforms, learning management systems, and mobile applications enable students to practice language skills beyond the classroom, monitor their performance, and receive instant feedback. Such opportunities foster self-direction, critical thinking, and problem-solving skills, which are essential components of effective learning.

Furthermore, collaborative technologies have been shown to enhance communication and social interaction among learners. Tools such as shared documents, discussion forums, and virtual classrooms create spaces for peer cooperation and knowledge exchange. Social constructivist theories suggest that language learning occurs more effectively through interaction and negotiation of meaning. ICT-based collaboration therefore supports both linguistic development and interpersonal skills. Consequently, many educators advocate for blended or technology-integrated instruction as a means of creating richer learning experiences.

Previous empirical and descriptive studies have explored various applications of ICT in EFL contexts. Samandarov and authors (2020) examined the role of ICT in EFL classrooms and highlighted that digital platforms and educational software contribute to more interactive and motivating lessons, enabling teachers to diversify instructional methods and better meet learners' needs. Similarly, Samandarov (2024) discussed the advantages of integrating digital tools in university-level ELT, reporting improvements in students' engagement, access to learning resources, and overall effectiveness of instruction. These studies provide both theoretical and practical insights into how ICT can be incorporated into language teaching.

However, although prior research has acknowledged the benefits of technology adoption, much of the existing literature remains descriptive or conceptual in nature. Many studies focus on explaining the types of digital tools available or outlining general advantages without systematically measuring learning outcomes. Consequently, there is still limited empirical evidence demonstrating the direct causal relationship between ICT integration and measurable improvements in both language proficiency and broader learning skills. This limitation is particularly evident in small classroom contexts, where experimental data are scarce.

Moreover, earlier investigations often examine language achievement separately from other learning-related variables such as motivation, engagement, and autonomy. Yet contemporary educational theories suggest that cognitive and affective factors are closely interconnected. Improvements in motivation and self-regulation may indirectly influence

language performance, and vice versa. Therefore, examining linguistic outcomes alone may not provide a comprehensive understanding of ICT effectiveness. A more holistic approach that considers both language development and learning skills is necessary.

Another gap identified in the literature concerns methodological rigor. While survey-based studies and perception analyses are common, fewer researchers employ experimental or quasi-experimental designs with pre- and post-testing procedures. Without controlled interventions and measurable comparisons, it becomes difficult to determine whether observed improvements are truly attributable to ICT use. Scholars have therefore called for more data-driven studies that combine quantitative and qualitative methods to provide stronger evidence of impact.

To address these shortcomings, recent research trends advocate for mixed-method approaches that integrate test scores, questionnaires, and interviews. Quantitative data allow researchers to measure proficiency gains objectively, whereas qualitative insights help explain learners' experiences and attitudes. Such comprehensive designs are particularly suitable for small-scale educational settings, where participant numbers may be limited but in-depth analysis is possible. By combining multiple data sources, researchers can achieve greater validity and reliability in their findings.

Building upon the theoretical foundations and practical observations of earlier studies, there remains a clear need for empirical investigations that evaluate how ICT integration simultaneously influences language proficiency and learning skills within authentic classroom environments. Specifically, small-scale experimental research can provide valuable evidence regarding the feasibility and effectiveness of technology-enhanced instruction in real educational contexts. Understanding these effects will assist teachers in making informed decisions about adopting digital tools and designing more effective lessons.

Therefore, the present study seeks to contribute to the existing body of knowledge by implementing an ICT-integrated instructional program and systematically measuring its outcomes through a mixed-method experimental design. By assessing both pre- and post-intervention performance as well as learners' perceptions, this research aims to provide comprehensive evidence of the pedagogical value of ICT in EFL education. In doing so, it extends previous descriptive work (Samandarov, 2024; Samandarov et al., 2020) and offers data-driven insights into how digital technologies can meaningfully enhance both language learning and broader educational development.

3. Methodology

Research Design: Mixed-method experimental design combining quantitative (pre/post tests) and qualitative (questionnaires, interviews) approaches.

Participants: 12 secondary school students (16–18 years old, intermediate English level). Two experienced teachers facilitated ICT-supported lessons.

ICT Tools and Materials: Google Classroom, multimedia resources, interactive quizzes (Kahoot, Quizizz), collaborative online tasks, mobile apps for self-directed learning.

Procedure:

1. Pre-test
2. 14-week ICT-integrated instruction (2×90 min/week)
3. Observation of engagement and motivation
4. Post-test
5. Questionnaires and semi-structured interviews

Data Analysis:

- Quantitative: descriptive stats, paired t-tests
- Qualitative: thematic analysis of interviews
- Triangulation ensured validity and reliability

Results**Table 1. Pre- and Post-Test Scores of Students**

Student	Pre-test	Post-test	Improvement
1	60	78	18
2	65	80	15
3	58	75	17
4	63	79	16
5	61	77	16
6	64	81	17
7	60	76	16
8	62	78	16
9	65	82	17
10	59	76	17
11	66	83	17
12	63	79	16
Mean	62.5	78.3	15.8

Figure 1. Students' Engagement, Motivation, and Autonomy (Likert-scale)

(Bar chart representation in Word)

- Engagement: 4.5/5
- Motivation: 4.6/5
- Autonomy: 4.4/5

DISCUSSION

The findings confirm that ICT-integrated instruction enhances both language proficiency and broader learning skills, even in a small classroom. Quantitative improvements demonstrate measurable gains in reading, writing, listening, and speaking, while qualitative feedback highlights increased motivation, engagement, and autonomy. These results align with prior studies (Samandarov et al., 2020; Samandarov, 2024) showing that digital tools facilitate interactive, student-centered learning environments.

Multimedia resources, online platforms, and collaborative tasks encouraged self-directed learning and peer interaction. Teachers observed higher participation and enthusiasm, suggesting that ICT integration can transform traditional lessons into more engaging experiences. Moreover, learners reported that ICT-supported instruction helped them manage their own learning, confirming the role of digital tools in promoting autonomy.

CONCLUSION

This study provides empirical evidence that ICT-integrated instruction positively affects EFL learners' language proficiency, motivation, engagement, and autonomy. Even with a small sample, the findings indicate that carefully selected digital tools can enhance classroom experiences and learning outcomes.

Implications:

- Teachers should adopt blended ICT approaches to improve learner engagement.
- Digital tools support both cognitive and affective aspects of language learning.
- Small-scale interventions can still yield significant pedagogical insights.

Limitations:

- Small sample size limits generalizability.
- Single school context; multi-site studies recommended.
- Future research could examine long-term effects and diverse age groups.

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