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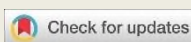
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## TOWARDS AN AI-INTEGRATED REFLECTIVE FRAMEWORK FOR EFL TEACHING IN UZBEKISTAN

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**Key words:** artificial intelligence, reflective practice, EFL teaching, metacognitive skills, learner autonomy, AI-supported learning, instructional clarity, Uzbek EFL classrooms.

### ABSTRACT

This study aims to propose an AI-integrated reflective framework for English as a Foreign Language (EFL) teaching in Uzbekistan. Grounded in the theory of reflective practice, the research examines how artificial intelligence can support different stages of reflection— reflection-for-action, reflection-in-action, and reflection-on-action— in language learning. A short-term classroom-based quasi-experimental design was conducted among university students, employing a pre-test–intervention–post-test structure. The study also investigated the role of instructional clarity in AI-assisted performance. The findings indicate that AI tools can effectively enhance reflective thinking, metacognitive awareness, and the structural organization of learners' responses when supported by clearly formulated written instructions and teacher guidance. However, the effectiveness of AI is dependent on learners' metacognitive readiness and task design. The study concludes that AI should function as a pedagogical support tool rather than a substitute for teaching, emphasizing the importance of structured reflection and teacher facilitation in EFL classrooms.

## O'ZBEKISTONDA INGLIZ TILINI CHET TILI SIFATIDA O'QITISH UCHUN SUN'IY INTELLEKT INTEGRATSIYALASHGAN REFLEKSIV MODELNI ISHLAB CHIQUISH SARI

**Kalit so'zlar:** sun'iy intellekt, refleksiv amaliyot, ingliz tilini chet tili sifatida o'qitish, metakognitiv ko'nikmalar, o'quvchi avtonomiyasi, SI yordamidagi ta'lim, topshiriq ko'rsatmalarining aniqligi, O'zbekiston EFL auditoriyalari.

### ANNOTATSIYA

Ushbu tadqiqotning maqsadi O'zbekistonda ingliz tilini chet tili sifatida o'qitish uchun sun'iy intellekt integratsiyalashgan refleksiv modelni taklif etishdan iborat. Refleksiv amaliyot nazariyasiga asoslangan holda, tadqiqotda sun'iy intellektning til o'rganish jarayonidagi refleksiya-bosqichlarini, ya'ni harakatdan oldingi refleksiya, harakat jarayonidagi refleksiya va harakatdan keyingi refleksiyani qanday qo'llab-quvvatlashi tahlil qilinadi. Universitet talabalari ishtirokida qisqa muddatli, auditoriyaga asoslangan kvazi-eksperimental tadqiqot o'tkazilib, unda pre-test, intervensiya va post-test tuzilmasidan foydalanildi. Shuningdek, SI yordamidagi faoliyatda topshiriq ko'rsatmalarining aniqligi ham o'rganildi. Natijalar shuni ko'rsatdiki, aniq yozma ko'rsatmalar va o'qituvchi yo'llanmasi mavjud bo'lganda, SI vositalari talabalarning refleksiv fikrlashi, metakognitiv xabardorligi hamda javoblarining tuzilishini samarali rivojlantiradi. Shu bilan birga, SI samaradorligi o'quvchining metakognitiv tayyorgarligi va topshiriq dizayniga bog'liq. Tadqiqot xulosasiga ko'ra, SI o'qitishni almashtiruvchi vosita emas, balki refleksiya va o'qituvchi fasilatitsiyasini kuchaytiruvchi pedagogik yordam vositasi sifatida qo'llanishi lozim.

Reflection is defined as a purposeful and deliberate cognitive process that focuses on how teachers and learners respond to the challenges of language teaching and learning [1]. It involves the application of experience and previously acquired knowledge and plays a crucial role in the process of learning English as a Foreign Language (EFL). Through reflective practice, both teachers and learners become actively engaged in the learning process. A learner who develops the ability to engage in self-reflection at different stages of language acquisition gradually becomes a more autonomous learner with enhanced metacognitive skills [2]. For this reason, reflection is widely regarded as a significant pedagogical tool that enables teachers to foster learner autonomy and encourages students to become reflective practitioners. The increasing significance of digital technologies in education has contributed to the development of innovative teaching approaches.

The strategy outlined in the Decree No. 4996 dated 17 February 2021 of the President of the Republic of Uzbekistan, “On Measures to Create Conditions for the Accelerated Introduction of Artificial Intelligence Technologies,” supports the national vision of “Digital Uzbekistan – 2030” and aims to expand the effective use of artificial intelligence across various sectors, including education. Consequently, educators and researchers are increasingly exploring ways to integrate AI into classroom practices in a transparent, safe, and pedagogically meaningful manner. The integration of artificial intelligence into English language teaching has created new opportunities for supporting reflective learning processes. AI-based tools can assist learners in analyzing their performance, generating feedback, and facilitating reflective thinking at different stages of the learning process. However, despite the growing use of AI technologies by both teachers and students, the pedagogical integration of AI into reflective teaching practices remains insufficiently explored. This issue is particularly relevant in the context of Uzbekistan. Although reflection is recognized as an essential component of effective language learning, reflective practices are not yet widely developed in EFL teaching, and research on the integration of artificial intelligence into reflective language learning remains limited. At the same time, the educational system demonstrates a strong examination-oriented culture alongside a growing interest in adopting digital innovations, which creates favorable conditions for exploring new AI-supported pedagogical approaches. In response to these challenges, this study proposes the design of an AI-Integrated Reflective Framework for EFL teaching in Uzbekistan. The proposed framework aims to demonstrate how artificial intelligence can support different stages of reflection in language learning and teaching. The novelty of this research lies in the conceptualization of an AI-supported reflective model that can be further tested and applied in EFL classrooms. The aim of this study is to propose an AI-integrated reflective framework for EFL teachers and learners that may serve as a foundation for further pedagogical experimentation and research.

### LITERATURE REVIEW

Reflection has long been recognized as a critical component of effective language learning and teaching. Defined as a purposeful and deliberate process of thinking about one’s experiences and actions, reflection enables both learners and teachers to evaluate strategies, identify challenges, and improve future practices [1], [3], [4]. In the context of the English as a Foreign Language classroom, reflective practices support the development of metacognitive skills, learner autonomy, and critical thinking. Students who engage in self-reflection are able to analyze their learning processes, monitor their progress, and adjust their strategies to achieve improved outcomes. Teachers, in turn, utilize reflection to plan and adapt lessons, assess student understanding, and promote deeper engagement with language tasks. Various stages of reflection— such as reflection-for-action, reflection-in-action, and reflection-on-action— illustrate how reflection can occur before, during, and after learning activities, thereby providing structured opportunities for both learners and instructors to enhance language acquisition. Despite these recognized benefits, existing research indicates that reflective practices remain underdeveloped in many EFL contexts, particularly in countries such as Uzbekistan, where the educational system is strongly examination-oriented and teacher-centered learning continues to dominate [5], [6]. This underscores the need for systematic frameworks that can guide the integration of reflection into classroom practices. Recent developments in educational technology have introduced artificial intelligence as a promising tool for supporting reflective learning in EFL classrooms. AI-powered applications— including adaptive learning platforms, chatbots, and automated feedback systems— offer opportunities for personalized learning and real-time self-assessment, both of which are essential for metacognitive development. Studies suggest that AI can enhance reflection by providing immediate feedback, prompting learners with guiding questions, and facilitating awareness of errors and progress [7], [8], [9]. By integrating AI into reflective activities, students can engage in structured reflection both inside and outside the classroom, while teachers can monitor performance and tailor instruction more effectively. However, current research on AI-supported reflection remains limited, particularly in contexts where both teachers and students are only beginning to adopt AI technologies in education. Notably, there is a lack of studies examining the systematic use of AI to support reflection within Uzbek EFL classrooms, creating a clear gap in understanding how AI can enhance reflective practices in these settings.

Although reflection is well established as a means of improving metacognitive skills in language learners, and AI has demonstrated potential to support reflective processes, the combined application of AI-supported reflection in Uzbek EFL classrooms remains underexplored. This gap provides the primary motivation for the present study, which proposes an AI-Integrated Reflective Framework to guide teachers and learners in effectively incorporating AI into reflective teaching and learning practices.

### DESIGN AND METHODOLOGY

The study employs a short-term, classroom-based quasi-experimental design conducted over one week at Diplomat University in Uzbekistan. The research aims to explore the effects of AI-supported reflective practice in EFL teaching and to examine how the clarity of task instructions influences the quality of AI-assisted student responses. Observational data indicated noticeable differences in the clarity, coherence, and organization of student outputs, particularly in cases where students relied on AI without clearly formulated written instructions. This comparative approach enabled an exploration of the interaction between instructional design and the effectiveness of AI in facilitating reflective learning. Data were analyzed using qualitative thematic analysis, focusing on reflective depth, evidence of self-regulation, clarity of argumentation, and the presence of metacognitive language. The study does not seek to measure long-term effects; rather, it aims to provide preliminary insights into the role of artificial intelligence and instructional clarity in shaping reflective practices in Uzbek EFL classrooms. The adopted research design and methodology enabled the development of a framework outlining potential approaches to integrating AI into EFL teaching practices.

### FRAMEWORK AND DISCUSSION

In the English language classroom, three stages of reflection are typically observed: reflection-for-action, reflection-in-action, and reflection-on-action. A central question of this study concerns the role of artificial intelligence and the ways in which its support can be effectively integrated into these stages. This research addresses this question through the development of an AI-integrated reflective framework. Reflection in EFL consists of three distinct stages [4], [9], [10], and analysis indicates that effective pedagogical practices incorporate all of them within the learning process. Reflection-in-action primarily occurs during classroom instruction. Teachers and instructors facilitate and guide the learning process, making decisions regarding whether and how to incorporate AI support. To enhance students' reflective capacity, AI can assist by generating prompts and guiding questions that foster awareness and deeper engagement with learning tasks.

When specific topics and vocabulary are practiced across all four language skills, reflection-on-action takes place. At this stage, both teachers and learners reflect on the learning process and evaluate outcomes by summarizing and discussing completed activities. The inclusion of AI support at this stage is particularly valuable, as it can provide structured feedback that promotes deeper reflection. Finally, reflection-for-action represents the stage at which decisions are made regarding future teaching and learning strategies. This stage should be emphasized not only for teachers but also for learners. Reflection-for-action creates opportunities for self-improvement among all participants in the learning process, enabling them to apply insights gained to future learning situations. Prior to subsequent lessons, both learners and teachers may utilize AI tools to generate ideas and strategies for improving the learning process. The outcome of this stage is enhanced self-regulation [2]. The interaction between reflection stages, AI support, and teacher facilitation is illustrated in Figure 1.

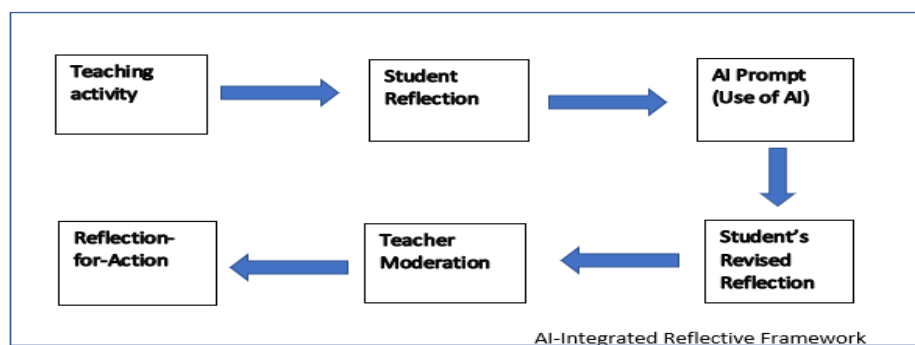


Figure 1. AI-Integrated Reflective Framework for EFL Learning

Based on the three identified stages of reflection, a one-week classroom-based quasi-experimental design was implemented among university students, incorporating AI tools at each stage of the reflective process. The study employed a pre-test–intervention–post-test structure to enable comparative observation and evaluation of learning outcomes.

When selecting instructional materials for the experiment, it is recommended that the principle of graded difficulty be applied, whereby students are provided with tasks that progressively increase in complexity [11]. The implementation of the AI-integrated reflective framework across different stages of the lesson– including the roles of artificial intelligence, teachers, and the expected learner outcomes– is summarized in Table 1.

**Table 1.***Implementation of the AI-Integrated Reflective Framework Across Lesson Stages*

<b>Stages</b>	<b>Role of AI</b>	<b>Role of Teacher</b>	<b>Learner Outcome</b>
<b>During the lesson</b>	Prompting questions	Facilitate	Awareness
<b>After the lesson</b>	Language Feedback	Guide interpretation	Deeper reflection
<b>Before next lesson</b>	Suggest Improvement	Adjust tasks	Self-regulation

At the beginning of the week, students completed a baseline reflective writing task without AI assistance. They were asked to reflect on the task content, the difficulties they encountered, and the strategies they employed, which enabled the researcher to establish their initial levels of reflective and metacognitive awareness. During the intervention phase, artificial intelligence tools were introduced to support reflective activities. In order to examine the role of instructional clarity in AI-assisted performance, two different task formats were implemented. In the first format, students received clearly structured written instructions embedded within the task, specifying which aspects to reflect upon and how to organize their responses. In the second format, the task content remained the same, but the instructions were delivered orally without written guidance. Observations and results indicated that students with higher metacognitive skills performed successfully in both formats, whereas students with lower metacognitive skills experienced difficulties when written instructions were not provided. The experiment demonstrates that the effectiveness of AI is closely associated with task clarity and the user’s cognitive readiness. Therefore, AI alone is insufficient; without reflective practices and teacher guidance, lesson outcomes are less effective than expected.

At the end of the week, students completed a post-test reflective task using AI support under standardized written instructions. The post-intervention reflections were compared with the baseline responses in order to identify changes in reflective depth, metacognitive markers, structural organization, and linguistic development. In addition, students completed a brief perception questionnaire regarding the usefulness of AI in reflection and their perceived level of independent thinking while using AI tools. In conclusion, the proposed AI-integrated reflective framework demonstrates practical applicability in EFL classrooms. The findings of the short-term classroom experiment indicate that AI can effectively support learners’ reflective thinking when it is embedded within structured pedagogical guidance and clearly designed tasks. In particular, the results suggest that students with stronger metacognitive abilities were able to use AI assistance more productively, whereas learners with weaker reflective skills were unable to benefit fully without explicit written instructions and teacher moderation.

This finding underscores that AI should not replace pedagogical decision-making, but should instead function as a supportive instrument that enhances reflection, feedback, and self-regulation. When implemented across the stages of reflection-in-action, reflection-on-action, and reflection-for-action, AI tools can assist learners in generating questions, analyzing their learning strategies, and planning future improvements. Therefore, the framework provides a practical model for integrating AI into reflective English language teaching while preserving the central role of the teacher in guiding critical thinking and metacognitive development. Its application may help educators design more structured reflective activities and encourage students to develop independent learning habits, which are increasingly important in contemporary technology-mediated educational environments.

### CONCLUSION

This study set out to conceptualize and examine the applicability of an AI-Integrated Reflective Framework for English as a Foreign Language (EFL) teaching in the context of Uzbekistan. Grounded in the theoretical understanding of reflection as a structured and metacognitive process, the research demonstrated that the integration of artificial intelligence into reflective pedagogical practices can enhance the quality of learning when supported by appropriate instructional design and teacher guidance. The findings confirm that reflection remains a central component of effective language learning, contributing to the development of learner autonomy, critical thinking, and self-regulation.

The implementation of a short-term quasi-experimental design provided empirical insights into how AI tools can be embedded across the stages of reflection-for-action, reflection-in-action, and reflection-on-action. The results indicate that AI can effectively support reflective processes by facilitating feedback, guiding learners' attention to key aspects of their performance, and assisting in the organization of reflective responses. However, the effectiveness of AI is not autonomous; rather, it is contingent upon the clarity of task instructions and the learner's level of metacognitive readiness. In particular, the comparative analysis of task formats revealed that students with higher metacognitive skills were able to utilize AI tools productively across different conditions, while students with lower reflective abilities encountered difficulties in the absence of clearly structured written instructions. This finding underscores the critical role of instructional scaffolding and highlights that AI should be positioned as a supportive rather than substitutive element within the pedagogical process.

Furthermore, the study confirms that structured integration of AI into reflective activities enables measurable improvements in reflective depth, coherence of argumentation, and metacognitive awareness. The use of AI in post-intervention tasks, combined with standardized instructional support, contributed to more organized and analytically grounded student responses. At the same time, the findings reveal that without systematic incorporation of reflective practices and teacher mediation, the potential of AI remains limited. This is particularly relevant in the Uzbek EFL context, where exam-oriented learning traditions and limited exposure to reflective methodologies present both challenges and opportunities for pedagogical innovation.

Within the scope of the study, several proposals emerge directly from the findings. The integration of artificial intelligence into EFL teaching should be systematically aligned with clearly structured and explicitly formulated task instructions, as instructional clarity has been shown to significantly influence the effectiveness of AI-assisted learning. Reflective practices should be deliberately incorporated into all stages of the lesson, ensuring that learners engage in reflection before, during, and after learning activities, with AI tools supporting each phase through prompting, feedback, and analytical assistance. At the same time, the development of learners' metacognitive skills should be treated as a prerequisite for effective AI use, as students with limited reflective capacity require additional scaffolding and teacher guidance to benefit from technological support. Consequently, the role of the teacher remains central in moderating AI use, guiding reflection, and ensuring that technological tools are applied in a pedagogically meaningful manner. Finally, the use of AI should be framed not as a replacement for traditional teaching practices, but as an instrument that enhances reflective thinking, supports self-regulation, and contributes to more structured and autonomous language learning.

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## SCHOLARLY REVIEW

The submitted article addresses the integration of artificial intelligence into reflective practices in English as a Foreign Language (EFL) teaching within the context of Uzbekistan. The topic is both timely and relevant, given the increasing emphasis on digital transformation in education and the growing role of AI technologies in pedagogical processes. The study demonstrates a clear attempt to bridge the gap between reflective pedagogy and emerging technological tools, which enhances its academic value. From the perspective of scientific novelty, the article contributes by proposing an AI-Integrated Reflective Framework that systematically aligns artificial intelligence tools with the three established stages of reflection: reflection-for-action, reflection-in-action, and reflection-on-action. While both reflective practice and AI in education have been widely studied independently, their combined application within a structured pedagogical framework, particularly in the Uzbek EFL context, represents a meaningful conceptual advancement. The framework provides a model that can be further tested and adapted in similar educational environments.

The relevance of the study is evident in its alignment with current educational reforms and digitalization strategies in Uzbekistan. The focus on reflective learning addresses an existing pedagogical gap in exam-oriented educational systems, where metacognitive skills are often underdeveloped. Furthermore, the incorporation of AI responds to contemporary demands for innovation in teaching and learning. The practical significance of the article lies in its potential to guide educators in implementing AI-supported reflective activities, thereby enhancing learner autonomy and instructional effectiveness. In terms of methodology, the study employs a short-term classroom-based quasi-experimental design, which is appropriate for exploratory research. The use of a pre-test–intervention–post-test structure allows for a comparative analysis of changes in reflective depth and metacognitive awareness. Additionally, the qualitative thematic analysis provides insights into learners' cognitive processes and the impact of instructional clarity. However, the limited duration of the experiment and the absence of quantitative validation may affect the generalizability and robustness of the findings. The results should therefore be interpreted as preliminary rather than conclusive. Among the strengths of the article is its clear conceptual framework, logical structure, and consistent alignment between theoretical foundations and empirical observations. The emphasis on instructional clarity and teacher guidance as mediating factors in AI effectiveness is particularly valuable and grounded in the data presented. At the same time, certain limitations should be noted. The study would benefit from a larger sample size, extended duration, and the inclusion of quantitative measures to strengthen the reliability of the results. Additionally, further elaboration on the specific AI tools used and their operationalization would enhance replicability. In conclusion, the article represents a well-structured and conceptually sound contribution to the field of EFL pedagogy and educational technology. Despite certain methodological limitations, it offers relevant insights and a practical framework that can inform future research and teaching practices. Therefore, it is recommended for publication in a scientific journal, subject to minor revisions addressing methodological clarity and expansion of empirical evidence.

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