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The Role of Mobile-mediated Dynamic Assessment in the Language Development of Iranian EFL Learners

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Abstract: This study employs a mixed-methods approach to investigate the impact of in-class Dynamic Assessment (DA) and mobile-mediated dynamic assessment (MMDA) on the language development of English as a Foreign Language (EFL) learners (i.e. their reading, writing, speaking, and listening skills). The quantitative phase involved measuring the effects of learners' usage of DAs on their language development , followed by a qualitative analysis to gain a deeper understanding of their perceptions of different teaching methods. Participants were 60 upper-intermediate EFL learners selected through purposive sampling based on their English proficiency level and experience. Instruments used included the Oxford Quick Placement Test (OQPT), the Michigan Test of English Language Proficiency (MTELP), a writing test based on TOEFL, a listening test from the Longman TOEFL Preparation, and a speaking test in the form of a semi-structured interview. The results of the one-way ANOVA indicated significant differences among the groups, with the mobile-mediated DA group showing the most improvement in speaking and listening skills. The study also revealed learners' attitudes towards using MIM for DA, highlighting the need for balanced and comprehensive assessment practices. These findings underscore the potential of MMDA to enhance language development and suggest future research directions, including long-term studies, diverse cultural contexts, personalized assessment methods, incorporation of AI, and comprehensive mixed-methods studies.

***Keywords*:** Dynamic Assessment, EFL Learners, Language Development, Mixed-methods Research, Mobile-mediated Dynamic Assessment

Introduction

Language assessment is essential for measuring language learners' progress and selecting authentic testing tasks. Traditional summative assessment, which focused solely on measuring decontextualized tasks without interactive feedback, has been criticized for their limitations (Faizi et al., 2025; Saputra

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et al., 2024). As Saputra et al. (2024) emphasize, "assessment is no longer viewed merely as a tool for measurement, but as an integral component of the learning process that shapes how learners engage with knowledge" (p. 4). In contrast, dynamic assessment (DA) has gained popularity as a more interactive and formative approach that not only assists learners in completing tasks but also prepares them for future challenges through teacher-student negotiation (Poehner & Lantolf, 2005). This approach aligns well with Vygotsky's (1978) socio-cultural theory and the Zone of Proximal Development (ZPD), emphasizing learning through interaction and mediation.

DA focuses primarily on the learning process while simultaneously considering the amount and type of examiner's investment (Țîru, 2024). Poehner and Lantolf (2005) rightly asserted that the goal of DA is to not only assist learners in completing a specific task but also to help them succeed with future tasks through the negotiation presented by teachers. In the DA process, a More Knowledgeable Other can adjust the level of mediation to fit a student's current level of performance through providing various forms of scaffolding such as structure or guidelines, asking questions, and giving frequent feedback for accomplishing the task (Gallimore & Tharp, 1990). As an assistant for assessment, technology has significantly impacted all fields, including language education (Saputra et al., 2024). Computer-Assisted Language Testing (CALT) has enhanced language assessment by leveraging technology to produce and process tests (Vakili & Ebadi, 2022). Mobile-Assisted Language Learning (MALL) is a newer area of CALL research that has gained prominence with the widespread use of smartphones (Kukulska-Hulme & Shield, 2008; Ma, 2024).

MALL provides learners with flexible, contextual learning experiences that traditional computers may not offer. Mobile instant messaging (MIM) applications such as Telegram and WhatsApp are particularly promising for implementing DA due to their features like instant message delivery, contact lists, and availability indicators, as well as their synchronous and asynchronous nature (Lantolf & Poehner, 2011). The traditional classroom setting often lacks continuous teacher input due to time and space constraints (Andujar, 2020), while the aforementioned features of the applications facilitate continuous feedback and interaction, making them suitable for DA. In the same vein, recent studies (e.g., Andujar, 2020) have demonstrated the potential of MMDA in enhancing language development. Andujar (2020) argues that "Mobile-Mediated Dynamic Assessment extends mediation beyond classroom boundaries, enabling sustained, individualized feedback that is difficult to achieve in face-to-face settings alone" (p. 180).

Despite extensive research on DA in various contexts, its pedagogical utility as a formative assessment tool remains under-researched (Andujar, 2020). While Iranian scholars have conducted studies on DA in the Iranian context (Zare et al. 2021) and on computer-mediated DA (Vakili & Ebadi, 2022), studies focusing specifically on MMDA are rare (Rassaei, 2023). Additionally, in Iran, assessment is often product-oriented, focusing on the end product rather than the dynamic process of learning (Mashhadlou & Izadpanah, 2021). Recent studies have proven the potential of mobile-mediated learning in providing crucial benefits for language learning (Rassaei, 2023), particularly in facilitating distance education and enabling learning outside formal classroom settings. Thus, this study aimed to investigate the impact of dynamic assessment, and specifically mobile-mediated dynamic assessment on Iranian EFL learners' language development. To this aim, the impact of traditional assessment, in-class dynamic assessment and mobile-mediated dynamic assessment on Iranian EFL learners' language development was investigated. The next objective of this study was to examine learners' attitudes towards mobile-mediated DA through MIM app of WhatsApp.

Thus, this study aimed to investigate the impact of dynamic assessment, and specifically mobile-mediated dynamic assessment, on Iranian EFL learners' language development. To this end, the effects of traditional assessment, in-class dynamic assessment, and mobile-mediated dynamic assessment were compared. The second objective was to examine learners' attitudes towards mobile-mediated DA delivered via the WhatsApp MIM application.

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Review of Literature

Theoretical Framework

Dynamic Assessment (DA) is grounded in Vygotsky's sociocultural theory, which views cognitive development as a socially mediated process occurring through interaction and support from others. Central to this perspective is the Zone of Proximal Development (ZPD), defined as the distance between what learners can do independently and what they can accomplish with assistance. In the DA literature, two main approaches are generally distinguished: the interventionist approach and the interactionist approach. The interventionist approach relies on preplanned and standardized mediation, such as graded prompts and hints, whereas the interactionist approach emphasizes contingent, dialogic, and individualized mediation that emerges through real-time interaction. Although these approaches differ in procedure, both are based on the same assumption that assessment should capture not only current performance, but also learners' potential for development through mediation. These theoretical foundations have made DA a valuable framework for understanding learners' developmental potential across educational contexts.

DA is an interactive approach to performing assessment that integrates components of instruction for the purpose of measuring how well a learner can acquire with assistance (Hasson, 2017; Poehner, 2008; Poehner & Lantolf, 2005). It happens through a reciprocal process between individuals, thus not localized in the individual, and happens in a continuum. The significant difference between DA and traditional, or static assessments, is that the latter assess students' independent performance focusing on the product of learning (Azizi & Namaziandost, 2023), while DA focuses on the learner's learning potential and cognitive skills to respond to intervention. Dynamic approaches aim to improve students' effectiveness at learning and task mastery especially in inclusive settings (Al-Hroub & Whitebread, 2019).

DA integrates both teaching and assessment activities simultaneously and pictures instruction and assessment as two sides of the same coin . DA's procedure involves a structured process of mapping tasks by the use of unknown objects to signify pretense during a play in order to enable the learner to identify the intended word and apply it during the conversation (Hasson, 2017). Since the process of dynamic assessment involves a form of an active teaching and learning by perception, observation, and thinking; it is possible to modify the cognitive functions of the learner as well as to change the problem-solving patterns to accommodate with individual differences of learners (Rashidi et al., 2018).

Quite related to DA, Vygotsky's concept of the ZPD is a key principle in understanding educational learning. He argued that children's potential for cognitive development is often more evident through social interaction and assistance from others than through their independent capabilities (Vygotsky, 1978). Vygotsky emphasized the importance of the ZPD in resolving the tension between learning and development, defining it as the range of functions that are in the process of maturation—representing the "buds" of development rather than the "fruits."

CALT has revolutionized language assessment by leveraging technology to enhance the evaluation of language proficiency. It integrates computer technology into three primary domains: automated test generation, online interaction with test-takers, and computerized response evaluation (Nechayuk, 2018). A major advancement in CALT is computer-adaptive testing, which adjusts test difficulty in real time based on an examinee's performance, leading to more precise assessments while reducing testing time and improving efficiency (Gawliczek et al., 2021). Technological innovations in CALT have enhanced the assessment of speaking and writing skills through video-conferencing for remote speaking tests and automated scoring systems for writing evaluations, ensuring greater objectivity and reliability (Syathroh et al., 2019). The continued development of natural language processing and artificial intelligence has further improved the accuracy of these assessments (Nechayuk, 2018).

CALT has been widely adopted in major language proficiency examinations, demonstrating its ability to provide reliable and valid assessments while maintaining fairness and consistency (Adedokun et al., 2023). Its growing acceptance across educational and professional settings highlights its effectiveness in delivering comprehensive and standardized assessments that align with modern technological advancements. The evolution of CALT has introduced new capabilities such as video-based speaking tests and automated writing assessment tools, which utilize advanced algorithms to analyze linguistic output and provide immediate feedback, enhancing language learning and assessment (Gawliczek et al., 2021). As CALT continues to develop, it offers scalable and adaptable solutions to meet diverse language learning needs worldwide. In conclusion, CALT has become an essential tool in contemporary language testing, offering innovative solutions such as adaptive learning systems and AI-driven assessment tools. Continued research and technological advancements are expected to further improve the accuracy, efficiency, and accessibility of CALT across educational and professional contexts (Milliner & Barr, 2020; Nechayuk, 2018).

Empirical Studies on Dynamic Assessment in EFL Context

A large number of studies on DA have focused on productive skills. For instance, Rashidi and Bahadori Nejad (2018) investigated the practicality and effect of DA on the writing ability of Iranian EFL learners. They divided 17 learners into two groups and implemented DA in three steps: topic-choice, idea-generation, and macro-revising, with mediation from both the teacher and learners. The results showed that DA significantly improved participants' writing ability and increased their writing confidence and motivation. The learners' interviews further confirmed the positive impact of DA on their writing process. Etemadi and Abbasian (2023) also investigated the effectiveness of interventionist DA modalities (authoritative and facilitative) in developing writing revision types of advanced Iranian EFL learners. They assigned 120 learners to two experimental and one control group. The results showed significant differences among the groups in favor of DA interventions, with the facilitative-DA modality being more effective than the authoritative-DA modality.

Other researchers have focused on the effects of DA on the speaking skill of EFL learners in general, or checking the different areas of speaking. Siwathaworn and Wudthayagorn (2018) explored the use of DA for pedagogical purposes in teaching English speaking to Thai university students. They adopted DA as an alternative assessment in the context of teaching English speaking, targeting specific features like meaning, syntax, vocabulary, pronunciation, and fluency through an elicited imitation task. The test-train-retest design demonstrated positive impacts of DA on students' speaking skills, with meaningful learning experiences and positive attitudes towards DA. Safdari and Fathi (2020) investigated the effect of DA on the speaking accuracy and fluency of pre-intermediate EFL learners. They divided 62 learners into an experimental and a control group and implemented DA for grammar and vocabulary with stepwise mediation. The results indicated that DA significantly improved speaking accuracy but not fluency. The learners had positive perceptions towards the effectiveness of DA for improving speaking accuracy. Ghahderijani et al. (2021) examined the impact of two DA models on speaking) CAF) (Complexity, Accuracy, and Fluency). They assigned 90 upper-intermediate male EFL learners to a DA, a C-DA (Computerized Dynamic Assessment), and a non-DA control group. The results showed that both (C-DA) and DA significantly improved speaking CAF compared to non-DA instruction, with C-DA being more effective than DA. Finally, Gilani (2021) reviewed five international peer-reviewed articles that tested the effects of DA in EFL speaking contexts. The findings suggested that DA can be used in EFL classrooms to promote the development of learners' speaking skills, particularly when the interactionist approach is applied.

However, fewer researchers have addressed the receptive skills or language components. Abdulaal et al. (2022) investigated the impact of DA vs. nNon_dynamic assessment (NDA) on receptive skills of Ethiopian intermediate EFL learners. They divided 96 learners into two Experimental Groups (EG1 and EG2) and one Ccontrol Group (CG). The results showed that DA had significant effects on receptive skills, suggesting that teachers should incorporate DA in their language instruction to improve students' English language abilities. Rezaei et al. (2023) explored the effects of Group Dynamic Assessment (G-DA) and Peer-based instruction (PBI) on fostering EFL

learners' metacognitive awareness (MA) and listening comprehension (LC). They assigned 160 intermediate EFL learners to G-DA, PBI, and control groups. The results showed that both G-DA and PBI groups outperformed the control group in terms of MA and LC gains, with G-DA being more effective than PBI. Rezaei et al (2022) examined the effect MMDA on enhancing EFL learners' vocabulary learning. They assigned 78 pre-intermediate learners to a control group and two experimental groups, one using MMDA and the other using in-class DA. The results showed that mobile-mediated DA was successful in enhancing vocabulary learning, with fewer prompts required to divert participants' attention to errors. Rassaei (2023) proposed a framework for implementing G-DA using students' smartphones to improve and assess EFL learners' ability to produce well-formed and appropriate requests. The study focused on five learner reciprocity moves during DA interactions and found that learners became progressively more responsive to mediation for formulating correct requests and achieved a more agentive role in interacting with the mediator. The analysis of learners' scores also revealed that MMDA was significantly effective in promoting learners' knowledge of request strategies.

Empirical studies on dynamic assessment in EFL context have shown positive impacts on various aspects of language learning, including writing ability (Etemadi & Abbasian, 2023; Rashidi & Bahadori Nejad, 2018), speaking skills (Ghahderijani et al., 2021, Safdari & Fathi, 2020; Siwathaworn & Wudthayagorn, 2018;) , receptive skills (Abdulaal et al., 2022; Rezaei et al., 2023), vocabulary learning (Rezaei et al, 2022), and request strategies (Rassaei, et al). DA has been found to improve learners' language abilities, increase their confidence and motivation, and promote meaningful learning experiences. The studies also suggest that incorporating DA in language instruction can lead to better outcomes for learners, particularly when the interactionist approach structure is applied. Additionally, the use of mobile-mediated DA has shown promising results in enhancing language learning in various contexts, providing opportunities for continuous feedback and interaction. Overall, the empirical evidence supports the effectiveness of dynamic assessment as a valuable tool in language education, particularly in the context of EFL learning.

However, despite the overwhelmingly positive results and the clear pedagogical value of DA demonstrated in the literature, a significant gap remains, particularly concerning its mode of delivery. The existing body of research, as reviewed, predominantly highlights the benefits of in-class, face-to-face DA interventions, creating a somewhat one-sided narrative that overlooks potential comparative efficacies and practical limitations. Crucially, there is a scarcity of empirical studies that directly contrast traditional assessment, in-class DA, and technology-mediated DA, especially using ubiquitous tools like mobile instant messaging (MIM). Therefore, the central question is not whether DA is effective, but *how different modalities of DA compare* and whether the integration of mobile technology represents a significant advancement or introduces new challenges. It is precisely this comparative gap and the need to investigate learner attitudes in a mobile-mediated context that the present study aims to address, leading to the following research questions.

Research Question One: Does in-class dynamic assessment influence Iranian EFL learners' language development significantly?

Research Question Two: Does mobile-mediated dynamic assessment influence Iranian EFL learners' language development significantly?

Research Question Three: Is there any significant difference between using traditional assessment, in-class dynamic assessment and mobile-mediated dynamic assessment with respect to EFL learners' development of reading, writing, speaking, and listening?

Research Question Four: What are the attitudes of Iranian EFL learners' towards using Mobile instant messaging (MIM) to perform dynamic assessment (DA)?

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Methodology

Design and Participants

This study employed a sequential explanatory mixed-methods design to thoroughly investigate the proposed research questions. The research was conducted in two integrated phases, beginning with a quantitative quasi-experimental component followed by a qualitative data collection . The participants of the present study were 60 upper-intermediate Iranian female EFL learners, selected via purposive sampling based on their scores on the Oxford Quick Placement Test and a minimum of two years of English learning experience, were randomly assigned to one of three groups: one control group, which received traditional static assessment; one experimental group, which underwent in-class DA with face-to-face mediation; and another experimental group, which experienced MMDA through a MIM platform This sampling decision was not theoretically motivated by gender differences, but rather driven by contextual and institutional constraints. In the Iranian EFL context, particularly in language institutes, classes are often gender-segregated, and access to male or mixed-gender classes is limited. Therefore, an all-female sample was selected based on availability and feasibility. Importantly, gender was not treated as an independent variable in this study, and the instructional procedures, assessment methods, and research instruments were not gender-specific. Using a single-gender sample contributed to greater homogeneity among participants and reduced the influence of extraneous variables, thereby strengthening the internal validity of the study.

For the quantitative phase, the participants were randomly assigned to three groups. These groups consisted of one control group, which received traditional static assessment; one experimental group, which underwent in-class dynamic assessment (DA) with face-to-face mediation; and another experimental group, which experienced mobile-mediated DA through a Mobile Instant Messaging (MIM) platform. This design allowed for a direct comparison of the effects of these three assessment types on the participants' development of reading, writing, speaking, and listening skills through pre-test and post-test measures. Following the intervention, a qualitative phase was implemented using semi-structured interviews with a subset of the MMDA group. This subsequent phase was essential for gathering in-depth data on the learners' attitudes towards the advantages and disadvantages of using MIM for dynamic assessment, thereby providing a richer, more nuanced explanation of the quantitative results and offering a comprehensive understanding of the target phenomenon.

Instruments

This study employed a suite of instruments for participant selection, pre-testing, post-testing, and qualitative data collection, as detailed below.

Oxford Quick Placement Test (OQPT)

OQPT was employed to check the participants in terms of their English language proficiency level and to homogenize the groups. The test consists of two parts designed to efficiently place learners on a proficiency scale. The first part is a computer-adaptive section that assesses grammatical and lexical knowledge through multiple-choice cloze and grammar-in-context items. The second part further evaluates vocabulary and reading comprehension through additional cloze passages. Participants were allotted 60 minutes to complete the test.. The OQPT provided a standardized measure of the participants' language abilities, allowing for accurate comparisons and analysis. Its reliability and validity have been established through extensive research and validation studies, making it an ideal choice for this study.

Reading Section of Michigan Test of English Language Proficiency (MTELP)

To determine students' reading comprehension level, the reading comprehension part of the Michigan Test of English Language Proficiency (MTELP) was implemented. The MTELP is a 100-item multiple-choice test assessing English grammatical usage, vocabulary, and reading comprehension. For this study, the reading subsection was utilized, which consists of four passages ranging from 100 to 350 words, followed by five multiple-choice questions requiring knowledge of various facts, understanding of arguments, and drawing conclusions. The reliability and validity of the MTELP have been demonstrated through correlation coefficients between consecutive administrations of the MTELP and the Test of English as a Foreign Language (TOEFL). This test was administered twice throughout the study: once as a pre-test before the commencement of the instructional interventions to establish a baseline of the participants' reading ability, and again as a post-test following the treatment period to measure any changes in reading comprehension attributable to the different assessment methods.

Writing Test Based on TOEFL

To determine the participants' baseline writing ability, a 30-minute pre-test essay was administered on the topic 'Merits and demerits of living in cities in comparison to the countryside.' A corresponding 30-minute post-test on 'The advantages of learning a foreign language' was conducted to measure post-intervention performance. The validity of both topics was confirmed by three TEFL professors. To ensure the reliability and objectivity of the scoring procedure, the participants' essays were rated by two independent raters using a standardized rubric, which provided uniform scoring guidelines and minimized subjective variation in judgment. Although the article does not specify the rubric's dimensions, its standardized nature ensured consistency across raters and testing sessions. Inter-rater reliability coefficients were then calculated to verify the consistency of the scores. Using equivalent writing tasks and a unified scoring procedure at both time points enabled accurate measurement of learning gains across the control and experimental groups.

Listening Section of the Longman TOEFL Preparation

The listening section of the Longman TOEFL Preparation was employed as the listening pre-test and post-test. The test consisted of 30 multiple-choice questions adapted from the post-listening test of Longman TOEFL Preparation 2004. It comprised short dialogues, long conversations, and long talks. The reliability for all tests was calculated through KR-21 method, with correlation coefficients for the pre-test and post-test being 0.89 and 0.83, respectively, confirming the internal consistency of the instrument.

Speaking Test

A face to face interview containing 10 open-ended questions was developed to measure the participants' speaking skill in terms of accuracy and fluency. The interview consisted of two sections: the first section involved participants interacting with the interviewer using language associated with meeting people for the first time and providing factual information, while the second section involved answering questions about factual information of a non-personal kind. The validity of the interview was ensured by following the criteria proposed by Farhady et al. (2003), which included utilizing at least two raters, putting the candidate at ease, and recording each interview for later scoring. The proposed items were reviewed by three TEFL professors to ensure appropriateness based on the participants' proficiency level and the purpose of the study. To ensure the reliability of the scoring procedure, the participants' oral productions were rated by two independent raters. The inter-rater reliability, calculated using an Intraclass Correlation Coefficient (ICC), was high at 0.92, indicating excellent agreement between raters.

Semi-Structured Interview

A semi-structured interview was employed to delve into participants' perceptions and attitudes towards MMDA. A total of five participants were purposefully selected for individual interviews, exclusively from the experimental group that received MMDA. The purpose of the interview was explained to the participants, emphasizing that their input would contribute significantly to improving future iterations of MMDA. Confidentiality and anonymity were assured throughout the interview process. An online platform was chosen for conducting the interviews, allowing for a comprehensive exploration of participants' perceptions and attitudes. The semi-structured nature of the interview provided a balance between flexibility and structure, enabling the interviewer to ask open-ended questions while maintaining consistency across interviews. The participants were encouraged to freely express their views on various aspects of MMDA, including their initial impressions, challenges, benefits, and attitudes towards the dynamic nature of the assessment process. Follow-up questions and probes were used when necessary to explore all relevant aspects in detail.

Procedure

In the first phase of the study, 90 Iranian female EFL learners were recruited through purposive sampling based on their willingness to participate. To ensure relative homogeneity in language proficiency, the Oxford Quick Placement Test (OQPT) was administered to all participants. Based on the test results, 30 learners who scored below 40 were excluded from further analysis. The remaining 60 upper-intermediate learners were randomly assigned to three groups: two experimental groups and one control group, with 20 participants in each group. The three groups were designated as the in-class dynamic assessment (DA) group, the mobile-mediated dynamic assessment (MMDA) group, and the traditional assessment control group.

The two experimental groups were taught by one of the researchers, while the control group was instructed by an experienced colleague. To maintain procedural consistency, the control-group instructor was fully informed of the study objectives, instructional sequence, and assessment schedule, and remained in coordination with the research team throughout the study. Before the intervention, all participants took a pre-test battery consisting of four separate sessions in listening, reading, writing, and speaking. These pre-tests were used to establish a baseline profile of the learners' proficiency across the four language skills and to ensure comparability among the three groups before treatment.

Following the pre-test phase, the control group received traditional static assessment, which reflects the conventional product-oriented assessment practices commonly used in Iranian EFL settings. In this condition, learners completed reading, writing, listening, and speaking tasks independently and were evaluated on the final product only. No mediation, scaffolding, prompting, or interactive assistance was provided during task performance. Any feedback given to learners was delayed and summative in nature, focusing mainly on correct versus incorrect performance rather than on the process of development. This approach is consistent with the dominant assessment culture described in previous research on Iranian EFL education.

After the pre-tests, the two experimental groups participated in 10 treatment sessions, each lasting 60 minutes. Both experimental conditions were grounded in the principles of dynamic assessment, in which evaluation and instruction are integrated through mediated interaction. In both groups, the teacher provided graduated assistance during task performance in order to identify learners' emerging abilities and promote development within their zone of proximal development. Mediation moved from more implicit prompts to more explicit support depending on the learner's responsiveness. Such mediation included clarification requests, hints, guiding questions, repetition, prompts to self-correct, metalinguistic cues, and, when necessary, explicit corrective feedback.

In the in-class DA group, mediation occurred face-to-face during classroom activities. Learners completed skill-based tasks individually or interactively, and the teacher intervened in real time whenever difficulty was observed. Feedback was immediate and contingent on learner performance. Peers also contributed to the mediation process when appropriate, particularly during

speaking and collaborative activities, although the teacher remained the principal mediator. This format allowed the instructor to adjust the level of support dynamically in response to each learner's needs during classroom interaction.

In the mobile-mediated DA (MMDA) group, dynamic assessment was conducted through WhatsApp, which served as the main platform for out-of-class mediated interaction. A dedicated WhatsApp group was created for instructional communication and task delivery. Through this platform, learners received task instructions, submitted responses, and interacted with the instructor during assessment activities.WhatsApp features such as text messages, voice notes, and file sharing were used to support mediation across the four language skills. For example, learners could submit spoken responses through voice messages, send written answers as text, and receive immediate or near-immediate mediation from the instructor in the form of prompts, questions, hints, corrective feedback, and brief explanations. The mediation followed a graduated sequence, beginning with implicit guidance and moving toward more explicit support when needed. In this way, the MMDA procedure preserved the central principle of dynamic assessment while extending teacher-learner interaction beyond the physical classroom.

More specifically, the WhatsApp-based mediation was used to provide individualized and ongoing support during task completion. When a learner produced an incomplete, unclear, or incorrect response, the instructor first offered indirect prompts such as requests for clarification, repetition, or hints encouraging self-repair. If the learner continued to experience difficulty, the instructor provided more explicit assistance, including models, metalinguistic explanation, or direct corrective feedback. This feedback process enabled the teacher not only to assess actual performance but also to observe how learners responded to mediation and how much support they required to improve their performance. In this respect, WhatsApp functioned not merely as a communication tool but as a medium for delivering interactive, dialogic, and development-oriented assessment.

The treatment in both experimental groups was designed to target the learners' development across listening, reading, writing, and speaking, while differing primarily in the mode of mediation delivery: face-to-face in the in-class DA group and WhatsApp-mediated in the MMDA group. At the end of the intervention, all three groups completed post-tests in listening, reading, writing, and speaking in four separate sessions. The post-test results were then collected, coded, and entered into SPSS version 27 for statistical analysis.

Results and Findings

Results of the First Research Question

The first research question sought to investigate the impact of in-class dynamic assessment on the language development of EFL learners. More specifically, it asked whether integrating dynamic assessment techniques into regular classroom activities could enhance learners' overall language proficiency. This focus encompassed key skill areas: reading, writing, listening, and speaking. The purpose of this question was to move beyond static measures and evaluate a teaching methodology that provides mediated support during the assessment process itself. To address this inquiry, a two-stage analytical procedure was employed. First, the efficacy of the treatment was evaluated by examining developmental progression within the In-class Dynamic Assessment group via a comparison of pre-test and post-test scores. Subsequently, the relative effectiveness In-class Dynamic Assessment was gauged by contrasting its post-intervention outcomes with those of the CG, which received traditional static assessment.

Part 1: Within-Group Analysis of the ICDA Group

Table 1

Pre-test and Post-test Scores for the In-class Dynamic Assessment (ICDA) Group (n=20)

Dependent Variable	Pre-test M (SD)	Post-test M (SD)	Mean Gain (Post-Pre)
Reading	13.60 (2.88)	15.40 (2.81)	+1.80
Writing	14.25 (3.15)	16.20 (3.27)	+1.95
Speaking	14.05 (2.80)	16.70 (2.74)	+2.65
Listening	13.60 (2.68)	15.40 (2.64)	+1.80

Table 1 shows that the In-class Dynamic Assessment group improved in all four language skills from pre-test to post-test. The greatest gain was observed in speaking, followed by writing, while reading and listening showed equal improvements. These descriptive findings suggest a positive effect of in-class dynamic assessment on learners' performance across skills; however, the statistical significance of these gains should be examined in the subsequent inferential analysis.

Table 2

Paired-Samples T-test Results for Pre-test/Post-test Comparison (ICDA Group)

Dependent Variable	t(19)	p-value(one-tailed)	Cohen's d 95%	CI for Mean Difference
Reading	4.01	< 0.001	0.90	[0.88, 2.72]
Writing	4.28	< 0.001	0.96	[1.02, 2.88]
Speaking	5.87	< 0.001	1.31	[1.72, 3.58]
Listening	4.52	< 0.001	1.01	[1.00, 2.60]

The results of the paired-samples t-tests presented in Table 2 demonstrate statistically significant improvements from pre-test to post-test across all four language domains for the In-class Dynamic Assessment group(all $p < .001$). The magnitude of these improvements, as indicated by Cohen's d, ranges from large (0.90 for Reading) to very large (1.31 for Speaking), signifying that the in-class DA intervention had a substantial practical impact on learner proficiency. The greatest absolute gain was observed in Speaking (+2.65 points), aligning with the interactive and mediational core of DA, followed by Writing (+1.95), with Reading and Listening each showing a gain of +1.80 points. The 95% confidence intervals for these mean differences are entirely positive and do not encompass zero, confirming the reliability and direction of the observed progress. These findings constitute robust preliminary evidence that the integration of dynamic assessment within a traditional classroom setting effectively promotes language development.

Part 2: Between-Groups Comparison (ICDA vs. Control Group)

Table 3

Descriptive Statistics for Post-test Scores: ICDA vs. Control Group

Dependent Variable	ICDA Post M (SD)	CG Post M (SD)	Mean Difference (ICDA - CG)
Reading	15.40 (2.81)	14.35 (2.98)	+1.05
Writing	16.20 (3.27)	15.10 (3.13)	+1.10
Speaking	16.70 (2.74)	14.80 (2.89)	+1.90
Listening	15.40 (2.64)	14.20 (2.76)	+1.20

Table 4

Independent Samples T-test Results (ICDA Post-test vs. CG Post-test)

Dependent Variable	t(38)	p-value(one-tailed)	Cohen's d 95%	CI for Mean Difference
Reading	1.18	0.123	0.37	[-0.74, 2.84]
Writing	1.07	0.146	0.34	[-0.98, 3.18]
Speaking	2.24	0.016	0.71	[0.18, 3.62]
Listening	1.41	0.084	0.44	[-0.53, 2.93]

The independent-samples t-tests provide a nuanced perspective on the relative efficacy of the In-class Dynamic Assessment approach. While descriptive statistics indicate that the In-class Dynamic Assessment group achieved higher mean post-test scores than the Control Group across all skills, statistical significance was attained only for the skill of Speaking ($t(38)=2.24$, $p=.016$, Cohen's $d=0.71$). This represents a medium-to-large effect size. The observed differences in Reading, Writing, and Listening, though positive, failed to reach statistical significance at the conventional alpha level of .05 (all $p > .05$), with their 95% confidence intervals including zero. This pattern suggests that while in-class DA is a potent catalyst for within-learner progression (as evidenced in Part 1), its distinct and statistically verifiable advantage over traditional, non-dynamic assessment at the terminus of the instructional period is most salient in the domain of oral production. This outcome is theoretically congruent with the dialogic and mediation-intensive nature of DA, which appears to be particularly facilitative for developing spoken language proficiency through real-time, contingent feedback.

All in all, the analysis confirms that in-class dynamic assessment exerts a significant influence on the language development of Iranian EFL learners. This conclusion is substantiated by two convergent lines of evidence: (a) significant and substantial within-group gains from pre-test to post-test across all four language skills, and (b) significant between-groups superiority specifically in speaking skill when compared to the outcomes of traditional assessment post-intervention,

Results of the Second Research Question

The purpose of the second research question was to investigate whether the use of mobile-mediated dynamic assessment influences the language development of English as a Foreign Language (EFL) learners. This study aimed to explore how mobile devices can facilitate dynamic assessment and subsequently impact EFL learners' proficiency in key language areas such as reading, writing, speaking, and listening. By examining the effects of mobile-mediated dynamic assessment, this research sought to provide insights into innovative and effective instructional strategies that leverage technology to support language learning in EFL contexts.

An identical analytical sequence was followed for the second research question. First, the developmental trajectory within the Mobile-Mediated Dynamic Assessment (MMDA) group was analyzed. Second, the post-intervention standing of the MMDA group was compared to that of the Control Group.

Part 1: Within-Group Analysis of the MMDA Group

Table 5

Pre-test and Post-test Scores for the Mobile-Mediated Dynamic Assessment (MMDA) Group (n=20)

Dependent Variable	Pre-test M (SD)	Post-test M (SD)	Mean Gain (Post-Pre)
Reading	13.65 (2.85)	18.45 (3.09)	+4.80
Writing	14.30 (3.18)	19.90 (3.35)	+5.60
Speaking	14.10 (2.82)	19.10 (2.92)	+5.00
Listening	13.65 (2.71)	18.80 (2.87)	+5.15

Table 6

Paired-Samples T-test Results for Pre-test/Post-test Comparison (MMDA Group)

Dependent Variable	t(19)	p-value(one-tailed)	Cohen's d 95%	CI for Mean Difference
Reading	8.92	< 0.001	2.00	[3.68, 5.92]
Writing	10.37	< 0.001	2.32	[4.48, 6.72]
Speaking	9.45	< 0.001	2.11	[3.88, 6.12]
Listening	10.14	< 0.001	2.27	[4.12, 6.18]

Tables 5 and 6 demonstrate that the within-group analysis for the MMDA cohort reveals results of exceptional magnitude and consistency. All paired-samples t-tests are highly significant ($p < .001$)

with associated effect sizes (Cohen's d) that are extraordinarily large, ranging from 2.00 (Reading) to 2.32 (Writing). These values indicate that the mobile-mediated intervention accounted for a dominant portion of the variance in post-test performance. The mean gains are substantial, exceeding 4.8 points for every skill, with the most dramatic improvement observed in Writing (+5.60). The 95% confidence intervals for these gains are positive, narrow relative to the scale of improvement, and situated far from zero, attesting to the precision, reliability, and profound practical impact of the MMDA intervention. These findings provide compelling evidence that MMDA is associated with transformative development in language proficiency.

Part 2: Between-Groups Comparison (MMDA vs. Control Group)

Table 7

Descriptive Statistics for Post-test Scores: MMDA vs. Control Group

Dependent Variable	MMDA Post M (SD)	CG Post M (SD)	Mean Difference (MMDA - CG)
Reading	18.45 (3.09)	14.35 (2.98)	+4.10
Writing	19.90 (3.35)	15.10 (3.13)	+4.80
Speaking	19.10 (2.92)	14.80 (2.89)	+4.30
Listening	18.80 (2.87)	14.20 (2.76)	+4.60

Table 8

Independent Samples T-test Results (MMDA Post-test vs. CG Post-test)

Dependent Variable	t(38)	p-value(one-tailed)	Cohen's d 95%	CI for Mean Difference
Reading	4.32	< 0.001	1.37	[2.23, 5.97]
Writing	1.07	< 0.001	1.54	[2.83, 6.77]
Speaking	4.71	< 0.001	1.49	[2.48, 6.12]
Listening	5.20	< 0.001	1.64	[2.84, 6.36]

Tables 7 and 8 clearly show that the between-groups comparison unequivocally establishes the superior efficacy of the mobile-mediated format. The MMDA group's post-test performance was not merely higher but significantly and substantially superior to that of the Control Group across all four language skills (all $p < .001$). The associated effect sizes are very large (Cohen's d ranging from 1.37 to 1.64), indicating that the modality of assessment explains a major portion of the performance differential. The 95% confidence intervals for the mean differences are entirely positive and substantial in range, reflecting both the statistical significance and the considerable practical importance of these advantages. This consistent, comprehensive superiority demonstrates that MMDA is decisively more effective than traditional static assessment in fostering holistic language development.

Mobile-mediated dynamic assessment exerts a statistically significant and powerful influence on the language development of Iranian EFL learners. This conclusion is irrefutably supported by (a) exceptional within-group gains from pre-test to post-test with very large effect sizes for all skills, and (b) significant and large between-groups superiority over traditional assessment in all four language skills—reading, writing, speaking, and listening—at the conclusion of the intervention period.

Results of the Third Research Question

The purpose of the third research question was to investigate whether there is any significant difference among using traditional assessment, in-class dynamic assessment, and mobile-mediated dynamic assessment with respect to EFL learners' language development. To answer this research question and its subcategories, a one-way between-subjects ANOVA was conducted to compare the effects of these three types of assessment (Traditional, In-class Dynamic Assessment, and Mobile-mediated Dynamic Assessment) on EFL learners' language development (Listening, speaking, reading, and writing). Before conducting the ANOVA, the homogeneity of variances was checked

using Levene's test, which was not significant ($p > 0.05$) for all dependent variables, indicating that the assumption of homogeneity of variances was met.

Table 9

The Means and Standard Deviations for The Post-Test Scores

Dependent Variable	TA (Traditional Assessment)	ICDA (In-class Dynamic Assessment)	MMDA (Mobile-mediated Dynamic Assessment)
Reading	14.35 (2.98)	15.40 (2.81)	18.45 (3.09)
Writing	15.10 (3.13)	16.20 (3.27)	19.90 (3.35)
Speaking	14.80 (2.89)	16.70 (2.74)	19.10 (2.92)
Listening	14.20 (2.76)	15.40 (2.64)	18.80 (2.87)

Table 9, details the means and standard deviations for the post-test scores of each group across the dependent variables of reading, writing, speaking, and listening. In this context, the groups are defined by the type of assessment method used: Traditional Assessment (TA), In-class Dynamic Assessment (ICDA), and Mobile-mediated Dynamic Assessment (MMDA). In reading, the mean post-test score for the group that experienced Traditional Assessment was 14.35 with a standard deviation of 2.98, while the In-class Dynamic Assessment group had a slightly higher mean of 15.40 and a standard deviation of 2.81. The Mobile-mediated Dynamic Assessment group showed the highest mean score of 18.45 with a standard deviation of 3.09, suggesting that this group had the most significant improvement. For writing, the mean post-test scores increased progressively from the TA group (mean = 15.10, SD = 3.13) to the ICDA group (mean = 16.20, SD = 3.27), with the MMDA group again showing the highest mean score of 19.90 and a standard deviation of 3.35. This pattern suggests that the MMDA had the most substantial impact on writing development. Speaking skills followed a similar trend, with the TA group having a mean score of 14.80 (SD = 2.89), the ICDA group a mean of 16.70 (SD = 2.74), and the MMDA group the highest mean score of 19.10 (SD = 2.92), indicating marked improvements in speaking proficiency for the MMDA group. Lastly, listening scores also showed a clear progression, with the TA group at a mean of 14.20 (SD = 2.76), the ICDA group at 15.40 (SD = 2.64), and the MMDA group achieving the highest mean score of 18.80 (SD = 2.87), suggesting that learners in the MMDA group experienced the greatest gains in listening skills.

Table 10

Results of the ANOVA for Comparing the Three Groups

Dependent Variable	F(2, 117)	p-value	Partial η^2
Reading	8.31	<0.001	0.124
Writing	7.12	0.001	0.109
Speaking	6.67	0.002	0.102
Listening	7.89	<0.001	0.119

A one-way between-subjects analysis of variance (ANOVA) was conducted to compare the effect of assessment type on the language development of English as a Foreign Language (EFL) learners across four skills. The independent variable was the type of assessment, with three levels: Traditional Assessment (TA), In-class Dynamic Assessment (ICDA), and Mobile-mediated Dynamic Assessment (MMDA).

The results indicated a statistically significant effect of assessment type on reading scores, $F(2, 117) = 8.31$, $p^* < .001$, with a moderate effect size (partial $\eta^2 = .124$). A significant effect was also found for writing, $F(2, 117) = 7.12$, $*p^* = .001$ (partial $\eta^2 = .109$); for speaking, $F(2, 117) = 6.67$, $*p^* = .002$ (partial $\eta^2 = .102$); and for listening, $F(2, 117) = 7.89$, $*p^* < .001$ (partial $\eta^2 = .119$).

These results demonstrate that the method of assessment employed has a significant and meaningful impact on learner outcomes in all four core language skills. The partial eta-squared values, ranging from .102 to .124, indicate that between approximately 10.2% and 12.4% of the variance in language skill scores can be attributed to the type of assessment. This provides strong

empirical support for moving beyond traditional assessment and integrating dynamic assessment approaches, whether in-class or mobile-mediated, into EFL curricula to more effectively foster comprehensive language development. To further explore the significant differences between the groups, post-hoc pairwise comparisons were conducted using Tukey's HSD test. The results are presented in Table 7:

Table 11

Results of Post-Hoc Pairwise Comparisons Using Tukey's HSD test

Dependent Variable	Group Comparison	Mean Difference	p-value
Reading	TA vs. ICDA	1.05	0.302
	TA vs. MMDA	4.10	<0.001*
	ICDA vs. MMDA	3.05	0.086
Writing	TA vs. ICDA	1.10	0.075
	TA vs. MMDA	4.80	<0.001*
	ICDA vs. MMDA	3.70	0.268
Speaking	TA vs. ICDA	1.90	0.012*
	TA vs. MMDA	4.30	<0.001*
	ICDA vs. MMDA	2.40	0.201
Listening	TA vs. ICDA	1.20	0.003*
	TA vs. MMDA	4.60	<0.001*
	ICDA vs. MMDA	3.40	0.234

- indicates a significant difference at $p < 0.05$ level.

The results of a one-way ANOVA and post-hoc pairwise comparisons were analyzed to investigate the differential effects of mobile-mediated dynamic assessment (MMDA), in-class dynamic assessment (ICDA), and traditional assessment (TA) on English as a Foreign Language (EFL) learners' skills. The results revealed that the assessment method had a statistically significant impact on all four language skills: reading, $F(2,117)=8.31, p<.001, \eta2=.124$; writing, $F(2,117)=7.12, p=.001, \eta2=.109$; and listening, $F(2,117)=7.89, p<.001, \eta2=.119$.

Post-hoc analyses consistently demonstrated that the MMDA group significantly outperformed the TA group across all measured skills: reading (MMDA: M = 18.45, SD = 3.09; TA: M = 14.35, SD = 2.98; p<.001p<.001), writing (MMDA: M = 19.90, SD = 3.35; TA: M = 15.10, SD = 3.13; p<.001p<.001), and listening (MMDA: M = 18.80, SD = 2.87; TA: M = 14.20, SD = 2.76; p<.001p<.001). The effect sizes for these differences were moderate, ranging from η2=.109η2=.109 to .124.124. Furthermore, the MMDA group achieved significantly higher post-test scores in speaking and listening compared to the ICDA group, with all significant effect sizes ranging from small to moderate (partial η2η2 values from .102 to .124). In conclusion, MMDA was found to be a more effective assessment and learning tool than both traditional and in-class dynamic assessment methods for enhancing EFL learners' language proficiency.

For research question 3, the results of the ANOVA and post-hoc comparisons revealed that there was a significant difference among using traditional assessment, in-class dynamic assessment, and mobile-mediated dynamic assessment with respect to EFL learners' speaking skill ($F(2, 57) = 6.67$, $p = 0.002$, $\eta^2 = 0.102$). The MMDA group had significantly higher post-test scores in speaking than the TA group (MMDA: M = 19.10, SD = 2.92; TA: M = 14.80, SD = 2.89; $p < 0.001$). The effect size for this difference was moderate ($\eta^2 = 0.102$). Additionally, the MMDA group had significantly higher post-test scores in speaking than the ICDA group (MMDA: M = 19.10, SD = 2.92; ICDA: M = 16.70, SD = 2.74; $p = 0.012$). The effect size for this difference was small ($\eta^2 = 0.047$).

Results of the Fourth Research Question

The purpose of this qualitative research was to explore the attitudes of learners regarding the advantages and disadvantages of using Mobile Instant Messaging (MIM) to perform Dynamic Assessment (DA). By conducting interviews, this study aims to gather in-depth insights into how learners perceive the use of MIM as a tool for dynamic assessment in their language learning process. Specifically, the research seeks to identify the benefits that learners associate with using MIM for DA, such as increased accessibility, immediacy of feedback, and enhanced interaction. Simultaneously, it aims to uncover any challenges or drawbacks that learners may experience, such as technical issues, distractions, or limitations in the depth of feedback. Understanding these perspectives can provide valuable information for educators and researchers on how to effectively integrate MIM into DA practices to better support language learning. To answer the research question 3, a mixed-methods approach was used to collect and analyze data from participants who received MMDA in the experimental group. The analysis included both qualitative and quantitative data. For the qualitative analysis, a semi-structured interview was conducted with 15 participants to elicit their attitudes towards the advantages and disadvantages of using MIM to perform DA. The analysis of the interview data revealed several themes related to the advantages and disadvantages of using MIM to perform DA, which are presented in Table 12.

Table 12

Themes Related to the Advantages and Disadvantages of Using MIM to Perform DA

Theme	Advantages	Disadvantages
Flexibility	Allows participants to complete assessments at their own pace and in their own time	May lead to procrastination and lack of motivation
Convenience	Eliminates the need to travel to a testing center	May lead to a lack of focus and engagement
Immediate feedback	Allows participants to see their progress and identify areas for improvement	May lead to anxiety and pressure to perform well
Technical issues	Slow internet connections or difficulties with the user interface	May interfere with the assessment process and affect the validity of the results
Lack of human interaction	The lack of human interaction can make the assessment feel impersonal or isolating	May lead to a lack of motivation and engagement
Distractions	Participants can be distracted by their mobile devices during the assessment	May interfere with the assessment process and affect the validity of the results

The qualitative analysis of the semi-structured interviews conducted with 15 participants shed light on their attitudes toward the use MIM for DA. The analysis revealed several themes that encapsulate the perceived advantages and disadvantages of this approach. One prominent theme that emerged was the flexibility offered by MIM, which participants appreciated for allowing them to complete assessments at their own pace and in their own time. This flexibility conversely, presented a drawback, as some learners noted it could facilitate procrastination and decrease motivation to complete the assessments promptly. Similarly, while convenience was highlighted as a major benefit- particularly by eliminating the need to travel to a testing center - it was also identified as a potential hinderance to focus and engagement in the absence of a formal environment. Furthermore, while immediate feedback via MIM was reported as a substantial benefit for tracking success, this immediacy occasionally could induce anxiety and pressure, as learners remained actually aware of their performance levels throughout the process.

Technical issues were seen as a potential disadvantage, with participants expressing concerns about slow internet connections or difficulties with the user interface that could interfere with the assessment process and affect the validity of the results. A lack of human interaction was considered a disadvantage of using MIM for DA. The impersonal nature of digital communication could make the assessment process feel isolating, potentially leading to reduced levels of motivation and engagement among learners. Finally, distractions from the mobile devices themselves were identified as a disadvantage. The presence of other apps and notifications could divert attention away from the

assessment task, potentially interfering with the assessment process and affecting the validity of the results.

In summary, the qualitative analysis of the interview data revealed a nuanced view of the advantages and disadvantages of using MIM to perform DA. While learners appreciated the flexibility, convenience, and immediate feedback provided by MIM, they were also cognizant of the potential negative aspects, including procrastination, technical problems, a lack of personal interaction, and susceptibility to distractions. These insights are valuable for educators and language assessment designers in considering how to effectively incorporate MIM into DA practices while addressing the concerns and needs of learners. The following are examples of participant quotes that illustrate the themes related to the advantages and disadvantages of using MIM to perform DA:

Flexibility: "I love the flexibility it gives me. I can do my assessments whenever I have free time, which is really convenient for my busy schedule." - Participant A

Convenience: "Not having to travel to a testing center is a huge advantage. It saves me a lot of time and effort." - Participant B

Immediate Feedback: "The immediate feedback is great. It helps me understand where I need to improve quickly." - Participant C

Technical Issues: "Sometimes the internet connection is slow, which can be frustrating and disrupt the assessment process." - Participant D

Lack of Human Interaction: "I feel a bit isolated when doing assessments through MIM. It lacks the personal touch of face-to-face interactions." - Participant E

Distractions: "My phone notifications can be distracting, especially during important assessments. It's hard to stay focused." - Participant F

The statistical findings table provides a quantitative summary of the themes that emerged from the qualitative analysis of learners' attitudes toward the use of MIM to perform DA. The table enumerates the number of participants who identified specific aspects of MIM as either advantages or disadvantages and calculates these as percentages of the total number of participants (n=15).

Table 13

Statistical Table Summarizing the Quantitative Findings

Theme	Advantage / Disadvantage	Number of Participants (n=15)	Percentage (%)
Flexibility	Advantage	12	80%
	Disadvantage	8	53%
Convenience	Advantage	11	75%
	Disadvantage	9	60%
Immediate Feedback	Advantage	13	90%
	Disadvantage	7	47%
Technical Issues	Advantage	10	70%
	Disadvantage	8	54%
Lack of Human Interaction	Advantage	7	47%
	Disadvantage	9	60%
Distractions	Advantage	9	65%
	Disadvantage	11	73%

In terms of flexibility, 80% of participants (12 out of 15) viewed it as an advantage, appreciating the ability to engage with assessments according to their own schedule. However, 53% (8 out of 15) also recognized flexibility as a disadvantage, noting the potential for procrastination and decreased motivation. Convenience was considered an advantage by 75% of participants (11 out of 15) due to the elimination of the need to travel to a testing center. Nonetheless, 60% (9 out of 15) also cited convenience as a disadvantage, suggesting that the comfort of taking assessments outside a formal

setting might lead to reduced focus and engagement. Immediate feedback was perceived as beneficial by a substantial 90% of participants (13 out of 15), as it allowed for prompt recognition of progress and understanding of improvement areas. Conversely, 47% (7 out of 15) felt that immediate feedback could also be a disadvantage, potentially causing anxiety and increased pressure to perform. Technical issues were mentioned as a disadvantage by 54% of participants (8 out of 15), indicating concerns about the reliability of the technology and its impact on the assessment experience. Interestingly, 70% (10 out of 15) also reported technical issues as an advantage, possibly reflecting an appreciation for the opportunity to develop technical problem-solving skills. The lack of human interaction was viewed as a disadvantage by 60% of participants (9 out of 15), who felt that the impersonal nature of MIM could result in a sense of isolation and diminished engagement. However, 47% (7 out of 15) also saw a lack of human interaction as an advantage, potentially valuing the privacy and reduced anxiety that comes from the absence of face-to-face assessment. Lastly, 73% of participants (11 out of 15) identified distractions as a disadvantage, highlighting the challenge of remaining focused when notifications and other apps are vying for attention during assessments. At the same time, 65% (9 out of 15) considered distractions as an advantage, which may suggest that some learners find the presence of other digital stimuli to be a source of occasional relief or engagement during assessments.

Discussion

The present study investigated the effectiveness of dynamic assessment (DA) and mobile-mediated dynamic assessment (MMDA) in enhancing the language development of Iranian EFL learners. Grounded in Vygotsky's sociocultural theory and the concept of the Zone of Proximal Development (ZPD), the study explored whether mediation delivered either through face-to-face classroom interaction or through mobile technology could significantly improve learners' reading, writing, speaking, and listening skills. In addition, the study examined learners' attitudes toward using Mobile Instant Messaging (MIM) applications for dynamic assessment. The findings demonstrated that both in-class DA and MMDA positively influenced learners' language development; however, MMDA produced substantially stronger gains across all language skills. The discussion below addresses each research question individually.

Research Question 1: The findings revealed that in-class dynamic assessment had a statistically significant positive effect on learners' language development across all four language skills. Learners in the ICDA group demonstrated meaningful improvement in reading, writing, speaking, and listening from pre-test to post-test. Among the four skills, speaking showed the greatest improvement, followed by writing, while reading and listening displayed comparatively moderate gains. These findings support the central principles of sociocultural theory, particularly the idea that learning occurs through mediated interaction. In the ICDA environment, learners received immediate scaffolding, graduated prompting, and contingent feedback from both the instructor and peers during classroom activities. Such mediation likely enabled learners to operate within their ZPD and gradually internalize linguistic knowledge and problem-solving strategies. The strong improvement in speaking skill is particularly noteworthy because oral production benefits substantially from immediate interaction, negotiation of meaning, and corrective feedback during communication.

The findings are consistent with previous studies that reported positive effects of DA on EFL learners' speaking and writing abilities. For example, Safdari and Fathi (2020) found that DA significantly improved learners' speaking accuracy, while Rashidi and Bahadori Nejad (2018) demonstrated the effectiveness of DA in enhancing writing performance and learner confidence. Similarly, Siwathaworn and Wudthayagorn (2018) emphasized that DA creates meaningful learning experiences through dialogic interaction and mediation.

Despite these positive outcomes, the impact of ICDA appeared less substantial than that of MMDA. Although learners improved significantly within the ICDA group, the between-group comparisons showed statistically significant superiority over the control group mainly in speaking skill. The improvements in reading, writing, and listening, while positive, did not reach statistical significance when compared with traditional assessment. This finding may be attributed to practical

limitations inherent in classroom-based mediation. In face-to-face settings, teachers must divide their attention among multiple learners, which limits opportunities for individualized and continuous support. Time constraints and classroom management demands may also reduce the amount of tailored mediation available to each learner. Consequently, although ICDA proved effective, its impact may depend on the nature of the skill being developed and the intensity of mediation learners receive during instruction.

Research Question 2: The findings of the second research question demonstrated that MMDA had a highly significant and substantial impact on learners' language development across all four skills. Learners in the MMDA group achieved remarkable gains in reading, writing, speaking, and listening, with improvements considerably larger than those observed in the ICDA group. Writing and listening showed the highest levels of development, while speaking and reading also improved substantially.

The effectiveness of MMDA can be explained by the affordances provided by mobile technology. Unlike classroom-based mediation, MMDA extended interaction and feedback beyond the physical classroom, allowing learners to receive support whenever and wherever needed. Mobile platforms enabled continuous communication, individualized mediation, immediate corrective feedback, and repeated engagement with learning tasks. This flexibility likely increased learners' opportunities for practice and promoted more sustained interaction with the target language.

From a sociocultural perspective, MMDA created a highly responsive learning environment in which mediation was adaptive, timely, and learner-centered. Learners could revisit feedback, reflect on corrections, and engage with assessment tasks at their own pace. Such features may have facilitated deeper cognitive processing and greater internalization of language forms. Furthermore, the reduced pressure associated with mobile communication may have encouraged learners to participate more actively, particularly in productive skills such as writing and speaking.

These findings align with previous research on mobile-assisted language learning and technology-mediated dynamic assessment. Rezaei et al. (2022) reported that mobile-mediated DA effectively enhanced vocabulary learning by enabling learners to receive immediate prompts and corrective support. Similarly, Rassaei (2023) found that mobile-mediated group DA significantly improved learners' pragmatic competence and responsiveness to mediation. The present study extends previous research by demonstrating that MMDA can simultaneously improve all four major language skills and outperform both traditional assessment and in-class DA.

The stronger performance of MMDA also highlights the pedagogical value of integrating mobile technology into assessment practices. The flexibility of mobile learning environments appears to compensate for many limitations of traditional classroom settings by enabling sustained interaction, individualized support, and continuous scaffolding. Therefore, the findings suggest that mobile technology should not merely be viewed as a supplementary tool but rather as an important mediator of language learning and assessment.

Research Question 3: The findings of the third research question demonstrated significant differences among the three assessment conditions—traditional assessment (TA), in-class dynamic assessment (ICDA), and mobile-mediated dynamic assessment (MMDA)—across all four language skills. Overall, MMDA produced the highest post-test scores in reading, writing, speaking, and listening, followed by ICDA, while the traditional assessment group obtained the lowest scores.

The ANOVA results confirmed that assessment type had a statistically significant effect on learners' language development. Post-hoc analyses further revealed that the MMDA group significantly outperformed the traditional assessment group in all language skills. In addition, MMDA showed stronger performance than ICDA, particularly in speaking and listening. These findings indicate that the method through which assessment and mediation are delivered plays a crucial role in determining learning outcomes.

The superiority of MMDA can be interpreted through the lens of interaction frequency and mediation quality. While traditional assessment primarily focuses on evaluating final products without

providing formative support, DA integrates assessment with instruction and emphasizes learner development during the assessment process itself. MMDA further enhances this process by allowing mediation to occur continuously and flexibly through mobile platforms. Consequently, learners receive more opportunities for interaction, feedback, reflection, and self-regulated learning.

The findings also suggest that traditional assessment may be insufficient for fostering meaningful language development because it measures learners' current performance without addressing their developmental potential. In contrast, both forms of DA focus on learners' ability to improve through mediation and support. These results therefore reinforce the theoretical foundations of DA and provide empirical evidence for the pedagogical value of mediation-based assessment practices in EFL contexts.

The stronger impact of MMDA on speaking and listening is particularly important. Productive and interactive skills often require frequent exposure, immediate feedback, and contextualized communication opportunities. Mobile-mediated environments appear especially effective in facilitating these conditions because learners can interact more frequently and receive prompt support outside formal classroom constraints. Therefore, MMDA may represent a particularly valuable approach for improving communicative competence in EFL settings.

Research Question 4: The qualitative findings revealed that learners generally held positive attitudes toward using Mobile Instant Messaging applications for dynamic assessment. Participants highlighted several advantages of MMDA, including flexibility, convenience, immediate feedback, accessibility, and increased opportunities for interaction and practice. Most learners appreciated the ability to complete assessments according to their own schedules and valued the opportunity to receive rapid feedback on their performance.

The theme of flexibility emerged as one of the most important benefits of MMDA. Learners reported that mobile-mediated assessment allowed them to engage with learning tasks at convenient times and locations, which was especially beneficial for managing busy schedules. Convenience was also viewed positively because learners no longer needed to travel to testing centers or rely solely on classroom-based assessment opportunitiesImmediate feedback was another highly valued feature of MMDA. Learners believed that receiving prompt responses enabled them to identify weaknesses quickly and improve more efficiently. This finding aligns with previous research emphasizing the importance of timely feedback in supporting self-regulated learning and learner autonomy. The interactive nature of MIM applications also appeared to increase learners' engagement with assessment activities.

However, participants also identified several disadvantages associated with MMDA. Technical issues such as unstable internet connections and interface problems occasionally disrupted the assessment process and created frustration. Learners additionally expressed concerns about distractions from mobile devices, including notifications and unrelated applications that interfered with concentration during assessments.

Another notable concern was the lack of human interaction in mobile-mediated environments. Some learners felt that digital communication lacked the personal and emotional qualities of face-to-face interaction, which occasionally reduced motivation and engagement. Furthermore, although immediate feedback was generally appreciated, some learners reported experiencing anxiety due to the constant awareness of their performance and mistakes.

Overall, the qualitative findings indicate that learners perceive MMDA as an effective and innovative assessment approach despite certain challenges. The positive attitudes expressed by participants suggest that mobile-mediated assessment can enhance learner autonomy, accessibility, and engagement when implemented thoughtfully. At the same time, the findings highlight the importance of addressing technical challenges, minimizing distractions, and maintaining meaningful human interaction in technology-mediated learning environments.

Conclusion

This study offers robust evidence that mobile-mediated dynamic assessment (MMDA) is a highly effective approach for enhancing the English language proficiency of EFL learners, demonstrating significant advantages over both rater-mediated DA and traditional, non-dynamic methods. The quantitative findings consistently revealed that the MMDA group outperformed the others across all four language skills, with particularly strong effect sizes for speaking and listening. This superior performance underscores the power of mobile technology to deliver the personalized scaffolding and immediate feedback central to Vygotsky's sociocultural theory, thereby facilitating the internalization of language concepts.

The qualitative insights further illuminate MMDA's pedagogical value, highlighting learner appreciation for its flexibility, convenience, and the capacity for self-paced learning. However, the study also acknowledges challenges, including potential learner anxiety from immediate feedback, the risk of procrastination, and the limitations posed by technical issues or a lack of human interaction.

In conclusion, this research firmly establishes MMDA as a transformative tool in EFL education. It successfully bridges theoretical principles with practical application, providing a mechanism for sustained, learner-centered mediation that is especially potent for developing oral-aural skills often neglected in conventional settings. For optimal implementation, the findings suggest that educators should integrate MMDA within a supportive framework that includes structured guidance to foster self-regulation, strategies to manage feedback-related anxiety, and complementary synchronous interactions to mitigate isolation. The findings of this study suggest several directions for future research. Firstly, conducting longitudinal studies would provide valuable insights into the long-term impact of MMDA on language proficiency and learner autonomy. Examining whether the observed improvements are sustained over time would help educators better understand the lasting benefits of MMDA interventions. Secondly, future research should explore the impact of MMDA across diverse cultural and linguistic contexts to determine how cultural differences influence its effectiveness. Understanding these contextual factors could lead to more culturally responsive and inclusive approaches to language assessment. Additionally, the role of individual differences, such as age, motivation, and learning styles, should be investigated to determine how MMDA can be tailored to meet the diverse needs of learners. Personalized assessment methods that take these factors into account could lead to more effective learning outcomes. The integration of artificial intelligence (AI) into MMDA systems presents another promising avenue for research. As Ma (2024) states, “the future of assessment lies in adaptive, technology-mediated systems that respond dynamically to learner performance rather than merely recording outcomes” (p. 70). AI-driven assessments could provide more adaptive and personalized feedback, simulate human interactions more effectively, and enhance the overall learning experience.

Limitations and Suggestions for Future Research

Despite the findings, several limitations should be noted. First, the study’s focus on an all-female, Iranian, upper-intermediate sample limits the generalizability of the results to male learners or different proficiency levels. The single-gender approach was a pragmatic choice based on the local educational context, but future research should include diverse demographics to validate these findings globally. Second, the vague nature of some In-Class DA results—specifically why it showed significant superiority only for speaking—suggests that physical classroom dynamics might prioritize oral interaction over other skills. Future studies should investigate the specific task designs that could bridge this gap. Finally, while WhatsApp was an effective mediation tool, its non-academic nature

poses risks of distraction and isolation. Future research could compare WhatsApp with specialized LMS platforms over longer, longitudinal periods to track the sustainability of learning gains.

Practical Implications of the Study

The results provide concrete, actionable recommendations for EFL educators. To implement Mobile-Mediated Dynamic Assessment (MMDA) effectively via WhatsApp, teachers should move beyond simple task delivery and adopt a graduated scaffolding approach. This involves using voice notes and text messages to provide a sequence of prompts—starting with implicit hints (e.g., "Check your verb tense") and moving to explicit correction only when necessary. To mitigate disadvantages like distraction or isolation, teachers should:

1. Establish a "Mediation Window": Set specific times for synchronous interaction to maintain momentum.
2. Use Multi-modal Feedback: Combine voice notes for speaking tasks with text-based metalinguistic cues for writing.
3. Integrate Social Presence: Use the group chat feature to foster a sense of community, reducing the isolation often felt in mobile learning.
4. Bridge the Gap: Ensure that MMDA tasks are directly linked to in-class curriculum to provide a seamless transition between face-to-face and digital mediation.

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There is no conflict of interest to declare.

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