



FORMATIVE ASSESSMENT, LEARNER AGENCY, SELF-REGULATED LEARNING, AND ENGLISH LANGUAGE ACHIEVEMENT AMONG IRAQI EFL STUDENTS

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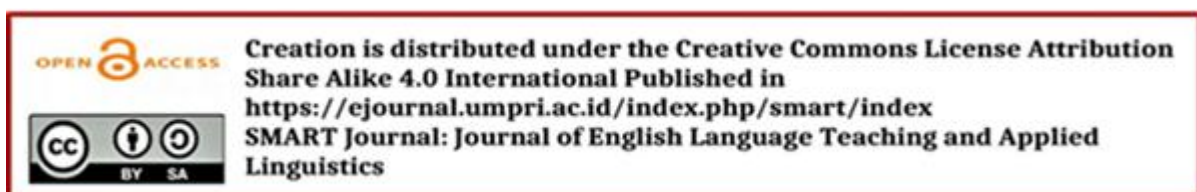
Abstract

This study examined the direct and indirect relationships between formative assessment and English language achievement through the serial mediating roles of learner agency and self-regulated learning among Iraqi EFL university students. Using a quantitative cross-sectional design, data were collected from approximately 400 undergraduate students at the University of Baghdad. Structural equation modeling revealed that formative assessment significantly enhanced learner agency, self-regulated learning, and English language achievement. The findings also supported the serial mediation model, demonstrating that formative assessment indirectly improved achievement by fostering learner agency and self-regulated learning.

Keywords: Equation Modeling, Formative Assessment, Iraqi EFL Learner, Learner Agency, Self-Regulated Learning, Structural

INTRODUCTION

Formative assessment has become a central concept in contemporary educational research because of its role in supporting learning through continuous feedback, monitoring, and instructional adjustment rather than merely evaluating final outcomes. Black and Wiliam (1998, 2009) argued that formative assessment is most effective when integrated into classroom practice to close the gap between current and desired performance, while Hattie and Timperley (2007) highlighted feedback as a key mechanism for improving learning. By actively involving students in the learning process, formative assessment promotes not only academic achievement but also learners' engagement and metacognitive development.



Research has increasingly emphasized the importance of learner agency and self-regulated learning (SRL) in explaining students' academic success. Learner agency refers to learners' capacity to make purposeful decisions and take responsibility for their learning (Emirbayer & Mische, 1998), whereas SRL involves planning, monitoring, and evaluating learning activities to achieve academic goals (Zimmerman, 2000, 2002). Consistent with Social Cognitive Theory (Bandura, 1986), formative assessment creates learning environments that encourage students to become active participants, regulate their learning, and develop greater responsibility for their academic progress.

Although previous studies have confirmed the positive relationships between formative assessment, learner agency, self-regulated learning, and academic achievement, these constructs have generally been examined in isolation or through simple direct relationships. Consequently, limited evidence exists regarding the sequential mechanisms through which formative assessment enhances English language achievement, particularly in Iraqi EFL higher education.

To address this gap, the present study proposes and tests a serial mediation model in which learner agency and self-regulated learning explain the relationship between formative assessment and English language achievement among Iraqi EFL university students. By integrating these constructs into a single structural model, this study extends previous research and provides new evidence on the psychological and behavioral pathways linking formative assessment to language learning success.

Formative assessment has been widely recognized as one of the most influential approaches in contemporary educational practice due to its ongoing role in enhancing teaching and learning processes. Unlike summative assessment, which focuses primarily on evaluating final learning outcomes, formative assessment is embedded within instruction and aims to improve student learning during the learning process. It operates through continuous feedback, observation, questioning, peer interaction, and self-assessment activities that help learners identify their strengths and weaknesses and adjust their learning strategies accordingly. A foundational contribution to the concept of formative assessment was made by Sadler (1989), who emphasized that effective assessment requires learners to understand the gap between their current performance and desired learning goals. Building on this

perspective, Black and Wiliam (1998, 2009) provided strong empirical evidence that formative assessment significantly improves student achievement across different educational contexts. They argue that formative assessment is most effective when feedback is timely, specific, and used actively by learners to modify their performance. This highlights the importance of feedback as a core mechanism in the learning process.

In addition, Wiliam (2011) further expanded the theory of formative assessment by emphasizing the role of classroom practices such as questioning, feedback, and learning intentions in supporting student progress. According to his framework, formative assessment is not a single technique but a collection of instructional strategies that systematically support learning improvement. Similarly, Heritage (2010) argues that formative assessment provides teachers with essential information about student understanding, enabling instructional decisions that are responsive to learner needs. Feedback plays a central role in formative assessment practices. Hattie and Timperley (2007) identify feedback as one of the most powerful influences on student achievement, particularly when it answers three key questions: where am I going, how am I going, and where to next. Effective feedback not only improves performance but also promotes deeper cognitive processing and metacognitive awareness. Similarly, Nicol and Macfarlane-Dick (2006) suggest that formative assessment fosters self-regulated learning by encouraging students to monitor their progress, evaluate their performance, and take responsibility for their learning process.

From a pedagogical perspective, formative assessment also supports learner-centered education by promoting active participation and engagement. Instead of positioning learners as passive recipients of knowledge, formative assessment encourages them to become active participants in evaluating and improving their own learning. This shift is particularly important in English as a Foreign Language (EFL) contexts, where learners need continuous feedback and opportunities for practice to develop language proficiency. Furthermore, formative assessment contributes to the development of metacognitive and motivational skills. When learners are engaged in reflection and self-assessment, they become more aware of their learning strategies and more capable of regulating their cognitive efforts. This process strengthens their ability to take control of their learning journey and enhances their long-term

academic development. Therefore, formative assessment is not only an instructional strategy but also a developmental process that supports deeper learning and learner autonomy.

Its theoretical and empirical foundations demonstrate its significant role in enhancing academic achievement and in fostering essential psychological constructs such as self-regulated learning and learner agency. Overall, formative assessment can be viewed as a multidimensional construct that integrates feedback, instructional support, learner participation, and continuous monitoring to enhance educational outcomes. Its effectiveness extends beyond improving immediate academic performance because it also contributes to the development of important psychological and behavioral capacities. Through regular feedback and opportunities for reflection, learners become more capable of taking responsibility for their learning, regulating their study behaviors, and engaging actively with academic tasks. Consequently, formative assessment serves not only as a mechanism for evaluating learning but also as a catalyst for learner development. Within EFL contexts, where continuous practice, feedback, and learner engagement are essential for language acquisition, formative assessment represents a particularly valuable instructional approach. Therefore, it is reasonable to expect that formative assessment may exert both direct and indirect effects on English language achievement through its influence on learner agency and self-regulated learning.

Learner agency has become an increasingly important construct in contemporary educational research due to its emphasis on learners' active role in shaping their own learning processes. Rather than viewing students as passive recipients of knowledge, learner agency positions them as active participants who make intentional decisions, set learning goals, and engage strategically with educational tasks. According to Emirbayer and Mische (1998), agency is defined as the capacity of individuals to act purposefully and make choices within specific social and contextual constraints. In educational environments, this means that learners are capable of influencing not only how they learn but also what and why they learn. In EFL contexts, learner agency plays a critical role in determining students' engagement with language learning activities. Language learning requires sustained effort, interaction, and continuous practice, which cannot be achieved without learners taking responsibility for their own progress. When learners demonstrate agency, they are more likely to seek

opportunities for practice, engage with feedback, and persist in challenging tasks. This active involvement enhances both cognitive and motivational aspects of learning, leading to improved academic outcomes. Therefore, learner agency is not only a psychological construct but also a practical determinant of success in language education. From a theoretical perspective, learner agency is closely linked to Social Cognitive Theory, which emphasizes the reciprocal relationship between personal beliefs, behavior, and environmental influences Bandura (1986). Within this framework, agency is shaped by learners' beliefs in their capabilities as well as by the learning environment provided by instructors. When educational settings promote autonomy, feedback, and participation, learners are more likely to develop a strong sense of agency. This interaction highlights the importance of instructional practices that encourage student involvement in the learning process.

Recent educational perspectives also suggest that learner agency is strengthened through reflective practices and feedback engagement. When students are encouraged to evaluate their own learning progress and make informed decisions about future learning strategies, they develop a stronger sense of ownership and responsibility. This process is particularly significant in EFL classrooms, where learners must continuously adapt their strategies to improve language proficiency. Consequently, learner agency serves as a foundational mechanism that supports both engagement and achievement in language learning contexts.

Overall, learner agency represents a crucial component in understanding how students interact with learning environments and how they transform instructional input into meaningful learning outcomes. Its relationship with formative assessment and self-regulated learning suggests that agency functions as a mediating factor that bridges instructional practices with academic achievement. Furthermore, feedback has been widely recognized as one of the most influential factors affecting student learning and achievement (Shute, 2008; Brookhart, 2017). By providing learners with information about their progress, strengths, and areas for improvement, feedback encourages active engagement, informed decision-making, and greater ownership of learning, all of which contribute to the development of learner agency.

Self-regulated learning (SRL) is widely recognized as a central construct in educational psychology due to its emphasis on learners' active role in controlling their cognitive, motivational, and behavioral processes during learning. Zimmerman (2000, 2002) conceptualizes SRL as a cyclical process consisting of three interrelated phases: forethought, performance, and self-reflection. In the forethought phase, learners set goals and select appropriate learning strategies. During the performance phase, they monitor their progress and apply self-control strategies to maintain focus and effort. Finally, in the self-reflection phase, learners evaluate their performance and adjust their strategies for future tasks. The importance of SRL in academic achievement has been widely documented in educational research. Self-regulated learners demonstrate higher levels of motivation, persistence, and academic performance because they actively manage their learning processes. Schunk and Zimmerman (2008, 2012) argue that SRL enables learners to transform motivation into effective learning behaviors. Similarly, Pintrich (2004) emphasizes that self-regulation involves the coordination of cognitive, metacognitive, and motivational strategies to achieve academic goals. Panadero (2017) further highlights SRL as an integrated process that combines cognitive, metacognitive, behavioral, and motivational components.

In EFL contexts, SRL plays a particularly significant role due to the complexity of language acquisition. Learning a foreign language requires continuous exposure, sustained practice, and strategic engagement both inside and outside the classroom. Learners with strong self-regulatory skills are more likely to engage in independent learning, monitor their language development, and adjust strategies based on feedback. Teng and Zhang (2016) confirm that SRL strategies are strongly associated with writing performance and language proficiency development in second language learning. From a theoretical perspective, SRL is grounded in Social Cognitive Theory, which emphasizes the reciprocal interaction between personal factors, behavior, and environmental influences Bandura (1986). Within this framework, SRL is viewed as a dynamic process shaped by learners' beliefs, goals, and contextual factors. Winne and Hadwin (1998) further explain SRL as an information-processing model in which learners actively generate feedback and regulate their cognitive activities during learning.

Importantly, formative assessment plays a key role in strengthening SRL by providing continuous feedback and opportunities for self-monitoring. According to Nicol and Macfarlane-Dick (2006), effective feedback promotes self-regulation by helping learners identify gaps between current and desired performance. Similarly, Hattie and Timperley (2007) argue that feedback is one of the most powerful influences on learning achievement. Shute (2008) also emphasizes that formative feedback enhances learners' ability to adjust strategies and improve performance. Through such processes, learners develop greater awareness of their learning progress and become more capable of regulating their own learning. Overall, self-regulated learning represents a fundamental construct in understanding how learners manage their learning processes and achieve academic success. Its strong relationship with learner agency and formative assessment highlights its central role in the theoretical framework of this study.

English language achievement represents a central outcome variable in English as a Foreign Language (EFL) research, as it reflects learners' ability to acquire, use, and demonstrate proficiency in the target language. In academic contexts, achievement is commonly operationalized through learners' performance in language tests, course grades, and standardized proficiency measures. However, contemporary educational research emphasizes that language achievement is not solely a reflection of linguistic knowledge, but rather the result of complex interactions among cognitive, motivational, and behavioral factors that influence the learning process. From a motivational perspective, Eccles and Wigfield (2002) argue that learners' beliefs about their abilities and task values significantly influence their academic performance. Students who perceive English learning as valuable and believe in their competence are more likely to invest effort, persist in challenging tasks, and engage actively in classroom activities. Similarly, Deci and Ryan (2000) highlight the importance of intrinsic motivation in enhancing learning outcomes, suggesting that learners who are internally motivated tend to demonstrate higher levels of engagement and achievement compared to those who rely solely on external regulation.

In addition to motivational factors, cognitive and strategic learning processes play a crucial role in determining language achievement. Oxford (2011) emphasizes that successful language learners employ a range of learning strategies, including cognitive, metacognitive,

and social strategies, which enable them to process, organize, and apply language knowledge effectively. These strategies help learners overcome linguistic challenges and improve their overall proficiency. Furthermore, self-regulated learning processes, such as goal setting, self-monitoring, and self-evaluation, are strongly associated with higher academic performance, as they allow learners to take control of their learning progress (Zimmerman, 2000, 2002). Self-regulation is particularly important in EFL contexts, where learners are required to engage in continuous practice beyond the classroom environment. Schunk and Zimmerman (2008) argue that self-regulated learners are more capable of sustaining effort over time, adapting their strategies when facing difficulties, and maintaining motivation toward long-term academic goals. This ability to regulate learning behavior contributes directly to improved language achievement by enhancing persistence, focus, and strategic engagement with learning tasks.

In addition, learner engagement and classroom participation have been identified as important predictors of English language achievement. Learners who actively participate in classroom discussions, seek feedback, and engage in collaborative learning activities tend to demonstrate higher levels of language proficiency. This aligns with Vygotsky's (1978) sociocultural perspective, which emphasizes the importance of social interaction in cognitive development and language learning. Through interaction with teachers and peers, learners are able to internalize language knowledge and develop communicative competence more effectively. Overall, English language achievement should be understood as a multidimensional construct shaped by the interaction of motivation, cognition, strategy use, and social engagement. Within this framework, both learner agency and self-regulated learning are expected to play essential roles in enhancing achievement, as they enable learners to take responsibility for their learning, apply appropriate strategies, and persist in achieving academic goals. Therefore, understanding the factors that influence language achievement is crucial for improving instructional practices and learning outcomes in EFL contexts.

The present study is primarily grounded in Social Cognitive Theory Bandura (1986) and Self-Regulated Learning Theory (Zimmerman, 2000). Social Cognitive Theory emphasizes the reciprocal interaction among environmental factors, personal factors, and

behaviors. Within the current study, formative assessment represents an environmental factor that may influence learners' beliefs and behaviors. Learner agency reflects students' capacity to act intentionally within learning environments, whereas self-regulated learning represents a set of strategic behaviors that facilitate academic success.

The proposed model assumes that formative assessment creates supportive learning conditions that enhance learner agency. Increased agency subsequently promotes greater self-regulation, leading to improved English language achievement. Therefore, learner agency and self-regulated learning are expected to function as sequential psychological mechanisms linking formative assessment to achievement outcomes.

The integration of Social Cognitive Theory and Self-Regulated Learning Theory provides a comprehensive explanation for the relationships proposed in the present study. Social Cognitive Theory emphasizes that learning outcomes are influenced by reciprocal interactions among environmental conditions, personal characteristics, and behavioral responses Bandura (1986). In the context of the current research, formative assessment represents an important environmental factor because it provides feedback, guidance, and learning support that may influence students' perceptions and actions. Learner agency reflects the personal dimension of the model by representing students' capacity to act intentionally and make decisions regarding their learning experiences.

At the behavioral level, self-regulated learning represents the strategic actions learners employ to achieve academic goals. Zimmerman (2002) suggested that effective self-regulation enables learners to translate motivation and intentions into productive learning behaviors. Accordingly, the theoretical framework proposes that formative assessment enhances learner agency, which subsequently promotes self-regulated learning and ultimately contributes to improved English language achievement. This sequence is consistent with the assumption that supportive learning environments encourage proactive learner behaviors that lead to positive educational outcomes.

RESEARCH METHOD

This research adopt quantitative cross-sectional design to examine relationships among formative assessment, learner agency, self-regulated learning, together with English language

achievement in Iraqi university students studying EFL. Quantitative method was selected because it allow objective testing of hypothesized connections among latent variables. To evaluate both measurement model together with structural relationships simultaneously, Partial Least Squares Structural Equation Modeling (PLS-SEM) were employed. This analytical technique are especially appropriate for complex theoretical models involving several latent constructs as well as testing mediation effects within proposed framework.

Study framework was developed from Social Cognitive Theory Bandura (1986) together with Self-Regulated Learning Theory (Zimmerman, 2000). Both perspectives explain that academic outcomes emerge from continuous interactions among environmental conditions, personal characteristics, together with behavioral regulation. Based on this framework, formative assessment represent instructional environment, whereas learner agency along with self-regulated learning function as internal psychological processes that transmit influence of classroom practices toward English language achievement.

Study involve 400 undergraduate students from English language programs at University of Baghdad, Iraq. Participants were recruited through convenience sampling because they were readily accessible and willing to participate during the data collection period. This sampling technique was considered appropriate because of time and administrative constraints and because the study aimed to examine theoretical relationships among the study variables rather than to produce population estimates. Although this sampling method are non-probability based, it is frequently use in educational studies that aim to examine theoretical relationships instead of making broad population generalizations. Students from different academic years were include to represent wider range of English learning experiences. Sample size also fulfill recommended criteria for Structural Equation Modeling by providing sufficient statistical power, reliable parameter estimation, together with acceptable model fit (Kline, 2016). Participation was voluntary, and every student receive information about research objectives before completing survey. Throughout study, anonymity together with confidentiality were carefully protect to meet ethical research standards.

Four instruments were used to collect the research data. The questionnaires were adapted from previously validated instruments to suit the Iraqi EFL higher education context.

Minor modifications were made to the wording of several items to improve clarity and contextual relevance while preserving the original constructs. The adapted instruments were reviewed by experts in English language teaching and educational assessment to ensure content validity before data collection. Formative assessment was evaluated using an adapted questionnaire based on the formative assessment frameworks proposed by Black and Wiliam (1998, 2009) and Wiliam (2011). Instrument measure important aspects of formative assessment, including teacher scaffolding, feedback quality, peer assessment, together with self-assessment, represent formative assessment as ongoing instructional process designed to improve learning rather than simply measure achievement. Learner agency was assessed using adapted instrument based on theoretical framework of Emirbayer and Mische (1998). Scale measure students abilities to set learning goals, make independent decisions, seek learning opportunities, together with participate actively in academic activities. Self-regulated learning was measured with instrument adapted from Zimmerman cyclical self-regulation model (Zimmerman, 2000), covering planning, strategy use, self-monitoring, self-evaluation, together with effort regulation as key cognitive, metacognitive, as well as behavioral dimensions of effective learning. All questionnaire responses were record on five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). English language achievement, however, was not measure through self-report data. Instead, official cumulative scores from students English courses were obtain from departmental academic records to provide more objective measure together with reduce potential reporting bias.

Approval for conducting study was first obtain from appropriate academic authorities at University of Baghdad before any data were collect. Questionnaires were then distribute during regular class sessions to encourage higher participation together with improve response rates. Before answering survey, students were inform about purpose of research and assure that their responses would not influence their academic assessment. Most participants complete questionnaire within approximately 15–20 minutes. After all responses had been gather, dataset was carefully examine for missing data, inconsistencies, together with outliers before statistical analysis was carry out.

Two-step Structural Equation Modeling (SEM) procedure was applied to analyze dataset. Structural model was examined after adequacy of measurement model had first been

confirm. At measurement stage, analysis focus on determining whether every construct were measured accurately together with consistently. Internal consistency was evaluated through reliability indices, whereas construct validity were verified by assessing convergent validity using Average Variance Extracted (AVE) together with discriminant validity through Fornell–Larcker criterion (Fornell & Larcker, 1981). These test confirm that observed indicators appropriately reflect their corresponding theoretical constructs. After measurement model meet required standards, structural model was estimated to examine proposed relationships among formative assessment, learner agency, self-regulated learning, together with English language achievement. Strength together with statistical significance of each relationship were determined from estimated path coefficients. To evaluate indirect effects, mediation analysis were conducted using bootstrapping procedure with 5,000 resamples, provide stable statistical estimates. This process allow proposed serial mediation model to be tested, where learner agency together with self-regulated learning sequentially explain influence of formative assessment on English language achievement.

Ethical considerations guide every stage of this research. Before participating, all respondent voluntarily agree to join study by providing informed consent. They were clearly informed that participation was entirely optional and that they can withdraw at any point without any academic or personal consequence. Confidentiality together with anonymity were guarantee throughout research process so that no participant were identified from collected data. By following these procedures, study comply with accepted ethical principles for educational research. One limitation of the study is that the use of convenience sampling may limit the generalizability of the findings to other EFL contexts or student populations. Therefore, the results should be interpreted with appropriate caution.

FINDING AND DISCUSSION

Findings

Demographic Profile, A total of 400 undergraduate EFL students participated in the study.

Table 1. Demographic Characteristics of the Participants, Including Gender, Academic Year, and Age Distribution

Variable	Category	Frequency	Percentage (%)
Gender	Male	180	45.0
	Female	220	55.0
Academic Year	2nd Year	133	33.3
	3rd Year	134	33.5
	4th Year	133	33.3
Age	22 Years	135	33.8
	23 Years	140	35.0
	24 Years	125	31.2

Note. $N = 400$ undergraduate EFL students.

Participant profile reflect balanced distribution across several demographic characteristic. Both male together with female students were represented, while participants also come from different age categories as well as academic years. This diversity provide adequate representation of Iraqi university students studying English as Foreign Language (EFL).

Measurement Model Assessment

Quality of measurement model was established before testing structural relationships. Reliability were examined by calculating Cronbach's alpha together with Composite Reliability (CR), whereas validity was assessed through factor loadings along with Average Variance Extracted (AVE) to determine convergent validity. These procedures ensure that each construct demonstrate acceptable measurement properties before hypothesis testing were conducted.

Table 2. Measurement Model Assessment

Construct	Cronbach's Alpha	CR	AVE
Formative Assessment (FA)	0.89	0.92	0.65
Learner Agency (LA)	0.88	0.91	0.63
Self-Regulated Learning (SRL)	0.90	0.93	0.67
English Language Achievement (ELA)	0.87	0.91	0.62

Note. CR = Composite Reliability; AVE = Average Variance Extracted.

Results presented in Table 2 confirm that every construct satisfy recommended measurement standards. Values for both Cronbach's alpha together with Composite Reliability were higher than minimum criterion of 0.70, demonstrate strong internal

consistency. In addition, all Average Variance Extracted (AVE) values exceed 0.50, provide sufficient evidence that convergent validity have been achieved for every latent construct.

Discriminant Validity

Discriminant validity was examined to determine whether the study constructs were empirically distinct from one another. The Fornell–Larcker criterion and the Heterotrait–Monotrait Ratio (HTMT) were employed to assess discriminant validity (Fornell & Larcker, 1981; Henseler et al., 2015). The results are presented in Table 3.

Table 3. Discriminant Validity (Fornell–Larcker Criterion)

Construct	FA	LA	SRL	ELA
FA	0.81			
LA	0.58	0.79		
SRL	0.55	0.62	0.82	
ELA	0.49	0.57	0.65	0.79

Note. Diagonal values represent the square root of AVE.

Structural Model Assessment

The structural model was examined to test the proposed hypotheses and answer the research questions. The results are presented in Table 4.

Table 4. Structural Model Assessment

Hypothesis	Path	β	t-value	p-value	Decision
H1	FA $\rightarrow$ LA	0.58	10.84	< .001	Supported
H2	FA $\rightarrow$ SRL	0.26	4.91	< .001	Supported
H3	FA $\rightarrow$ ELA	0.18	3.42	< .001	Supported
H4	LA $\rightarrow$ SRL	0.47	8.63	< .001	Supported
H5	LA $\rightarrow$ ELA	0.22	3.98	< .001	Supported
H6	SRL $\rightarrow$ ELA	0.41	7.74	< .001	Supported

Following the structural model assessment, each research question was addressed based on the corresponding hypothesis testing results. Regarding RQ1 (H1), formative assessment significantly predicted learner agency ($\beta = 0.58$, $t = 10.84$, $p < .001$), providing an affirmative answer to RQ1. Regarding RQ2 (H2), formative assessment also significantly predicted self-regulated learning ($\beta = 0.26$, $t = 4.91$, $p < .001$), confirming RQ2. For RQ3 (H3), formative assessment significantly predicted English language achievement ($\beta = 0.18$, $t = 3.42$, $p < .001$), providing support for RQ3. Regarding RQ4 (H4), learner agency significantly predicted self-regulated learning ($\beta = 0.47$, $t = 8.63$, $p < .001$), thereby answering RQ4 positively. Regarding RQ5 (H5), learner agency significantly predicted English language

achievement ($\beta = 0.22$, $t = 3.98$, $p < .001$), confirming RQ5. Finally, RQ6 (H6) was also supported, as self-regulated learning significantly predicted English language achievement ($\beta = 0.41$, $t = 7.74$, $p < .001$).

Mediation Analysis

Bootstrapping procedures were employed to examine the proposed mediation effects. The results are presented in Table 5.

Table 5. Mediation Analysis

Indirect Path	β	t-value	p-value	Decision
FA $\rightarrow$ ELA	0.13	3.71	< .001	Supported
FA $\rightarrow$ SRL $\rightarrow$ ELA	0.11	3.28	.001	Supported
FA $\rightarrow$ LA $\rightarrow$ SRL $\rightarrow$ ELA	0.11	4.26	< .001	Supported

The mediation results also provided direct answers to the remaining research questions. Regarding RQ7 (H7), learner agency significantly mediated the relationship between formative assessment and English language achievement ($\beta = 0.13$, $t = 3.71$, $p < .001$), providing support for RQ7. Regarding RQ8 (H8), self-regulated learning also significantly mediated the relationship between formative assessment and English language achievement ($\beta = 0.11$, $t = 3.28$, $p = .001$), confirming RQ8. Finally, RQ9 (H9) was supported, as learner agency and self-regulated learning sequentially mediated the relationship between formative assessment and English language achievement ($\beta = 0.11$, $t = 4.26$, $p < .001$), providing empirical support for the proposed serial mediation model.

Discussion

The findings of this study demonstrate that formative assessment contributes to English language achievement both directly and indirectly through learner agency and self-regulated learning among Iraqi EFL university students. Rather than functioning merely as an assessment strategy, formative assessment creates a supportive learning environment that promotes students' active engagement, responsibility, and self-regulation. These findings are consistent with Social Cognitive Theory (Bandura, 1986), which emphasizes that learning outcomes result from the interaction of environmental, personal, and behavioral factors.

The significant relationships identified for H1, H2, and H3 indicate that formative assessment enhances learner agency, self-regulated learning, and English language achievement. These findings support the work of Black and Wiliam (1998, 2009) and Hattie

and Timperley (2007), who argued that effective feedback and continuous assessment improve learning by helping students recognize performance gaps and adjust their learning strategies. In the Iraqi EFL context, the present findings further suggest that formative assessment promotes active learner participation rather than passive knowledge acquisition.

The significant effects of learner agency on self-regulated learning and English language achievement (H4 and H5) highlight the importance of students' active involvement in their own learning. Consistent with Emirbayer and Mische (1998) and Bandura (1986), students who assume greater responsibility for learning are more likely to engage in independent decision-making, persist in academic tasks, and achieve better learning outcomes. These findings extend previous research by demonstrating the central role of learner agency within an integrated explanatory model.

The findings also confirm the significant contribution of self-regulated learning to English language achievement (H6). Consistent with Zimmerman (2000, 2002) and Panadero (2017), students who effectively plan, monitor, and evaluate their learning achieve higher academic performance. The present study further indicates that self-regulated learning serves as a key mechanism through which formative assessment influences language achievement, reinforcing its importance in EFL higher education.

Finally, the mediation analysis (H7–H9) provides important theoretical evidence that learner agency and self-regulated learning sequentially explain how formative assessment improves English language achievement. Unlike many previous studies that examined these variables separately, the present study integrates them into a single serial mediation model, providing a more comprehensive explanation of the psychological and behavioral processes linking formative assessment to academic success. This represents the main theoretical contribution of the study and extends previous research on formative assessment in EFL contexts.

Overall, the findings confirm that formative assessment is not merely an evaluation tool but an instructional practice that develops learner agency and self-regulated learning, ultimately enhancing English language achievement. These results provide practical implications for EFL teachers by highlighting the importance of assessment practices that encourage meaningful feedback, learner participation, and autonomous learning.

CONCLUSION

This study examined the relationships among formative assessment, learner agency, self-regulated learning, and English language achievement among Iraqi EFL university students. The findings confirmed that formative assessment enhances English language achievement both directly and indirectly through learner agency and self-regulated learning, supporting the proposed serial mediation model. The study contributes to the literature by integrating these constructs into a single explanatory framework within the Iraqi EFL context. Practically, the findings suggest that EFL teachers should implement formative assessment practices that promote meaningful feedback, learner participation, and self-regulated learning. Future research is recommended to examine this model using longitudinal designs, different educational contexts, and additional psychological or instructional variables to enhance the generalizability of the findings..

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