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The Development of a Reflective Language Learning Model: A Structural Equation Modeling Approach

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ABSTRACT

Background: Several language learning theories exist to explain the language learning process. Reflective learning is one of the models that has received attention and has been employed to explain language learning and teaching.

Purpose: The present study aimed to develop and validate a close-ended reflective language learning instrument to discover EFL learners' reflective learning strategies while learning a language.

Method: Based on a comprehensive literature review, 358 concepts were extracted for reflective language learning. Then, experts' opinions on reflective language learning were gathered, leading to the extraction of 50 general themes. After the experts' approval, the researchers transformed the concepts into statements and constructed the final version of the questionnaire. In the next step, the initial version of the questionnaire was piloted with 100 participants, reducing the number of items to 47. Then, the piloted instrument was administered to a sample of 398 students. The obtained data were entered into SPSS and LISERL for exploratory and confirmatory factor analyses. Principle Component Analysis (PCA) was employed to run an explanatory factor analysis. Varimax rotation was performed on the underlying construct of the 47-item questionnaire. The result was the removal of four items and forming a 43-item questionnaire. A six-factor model of second language learning encompassing twelve behavioral cognitive items, twelve behavioral evaluative items, six behavioral metacognitive items, six behavioral interactional items, four behavioral reflective journal items, and three behavioral retrospective items was obtained. Then, the researchers performed confirmatory factor analysis to verify the six factors. Finally, a reflective language learning model was developed.

Results: The results showed that the newly developed Reflective Language Learning Questionnaire (RLLQ) was valid and reliable. The model formulated based on the data gathered from the administration of RLLQ also enjoyed acceptable fitness indices.

Conclusion: The questionnaire could be used in future studies. Researchers interested in reflective language learning, language teachers intending to follow reflective practices in their classes, and syllabus designers believing that reflection promotes learning can employ RLLQ.

KEYWORDS

construct validation, language learning, model development, reflection, Reflective Language Learning Questionnaire (RLLQ)

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INTRODUCTION

Throughout the history of English language teaching, controversies regarding learning a new language have been conspicuous among pedagogy practitioners and researchers. Such disputes have been due to perspective changes in defining language, learning, and teaching. Thus, researchers' quest to develop successful language learning models has been a central issue. One such model is reflective learning, which has been explored by several researchers (Gadsby, 2022; Kolb, 1984, 1994; Schön, 1987) since Dewey published his inspiring viewpoints regarding reflective thought in 1933. The effect of reflection in language teaching and learning is undeniable since reflection occurs in everyday activities in the

human mind. Reflective learning is synonymous with lifelong learning (Tan, 2021); thus, it can be employed in different learning contexts (Griggs et al., 2018).

Reflective learning has its roots in reflective thinking, which is crucial in fostering individuals' intellectual processes to become efficient in problem-solving and decision-making. Reflective thought embraces "active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends" (Dewey, 1933, p. 6). According to Dewey, reflective learning consists of two interrelated notions: first, a state of mental doubt in which thinking originates, and second, an act of inquiring to settle hesitation and perplexity, which could be resolved if explored through empirical studies. Schön (1983; 1987), who has a decisive role in expanding the notion of reflective learning, argues that learners' reflection on their own learning promotes learning. He distinguishes between reflection-in-action and reflection-on-action. Reflection-in-action is the activity that learners engage in as they encounter a problem in a learning context. Reflection-on-action is a process that occurs after learners' engagement in a learning context, and finally, in 'reflection-for-action,' individuals start planning materials. Therefore, the communal principle implied in reflective learning is that reflective thinking integrates "knowledge, practice, and human experience" (Colomer et al., 2013, p.1). What is essential is realizing that reflection is generally manifested in learners' actions when engaged in reflective practice (Alt et al., 2022).

Reflective learning explains reflection's role in teaching and learning and helps analyze the experience individuals have gained as a learning outcome. Kolb's (1984) experiential learning, developed based on Dewey's notions of reflection, indicates that individuals learn from their daily life experiences as they are engaged in reflection. Kolb and Kolb (2005) argue that personal experiences are the source of learners' autonomous learning and critical thinking.

However, using reflective practices is not limited to language learning and teaching. Several studies other than language teaching and learning have reported their efficacy (Cicmil & Gaggiotti, 2018; Rogers et al., 2019; Winkel et al., 2017). Moreover, studies on different aspects of reflective learning at university levels indicate that it significantly improves various aspects of learning (Aryani et al., 2017; Feng, 2016; Kember et al., 2000). Some studies have supported the role of reflective journals in improving reflective thinking (Bruno & Dell'Aversana, 2017; Griggs et al., 2018). Still, some others have shown the effect of reflective practice on language learning (Fuertes-Camacho et al., 2021; Southcott & Crawford, 2018).

However, the critical issue that motivated the current study researchers is understanding the effects of reflective activities on language learning and discovering the types of reflective learning strategies learners use while engaged in reflective practices. Therefore, the researchers aimed to construct a close-ended questionnaire to measure learners' learning strategies during reflective language-learning practices. The researchers assumed that developing a closed-ended reflective language learning scale can help EFL/ESL teachers understand the extent to which students get involved in reflective practices. Besides, they can specify strategies learners use during such procedures, resulting in cognitive processes responsible for learning. Such a scale can also help English language learners employ strategies to promote reflective learning. To achieve the study objectives, the researchers formulated the following research questions:

RQ1: What are the main components of Iranian EFL learners' language reflectivity?

RQ2: Is the newly developed reflective language learning questionnaire a reliable and valid data collection instrument?

LITERATURE REVIEW

Reflective Learning

Experiential learning, as the core concept of reflective learning, is a process by which learners reflect on their experience and obtain more understanding from such a reflection (Morris, 2020). Dewey asserts that when learners reflect, they confront emerging doubts, followed by a reflective process, and end in more understanding. For Schön (1983), reflection is the ability to think and decide how to act while doing a task (reflection in action). Thus, reflective learning usually deals with practical problems, accompanied by doubt and perplexity, before possible solutions (Fullana et al., 2016). Schön completes his view on reflection in action by a complementary stage of reflection or reflection on action, which refers to deep thinking about an experience and re-evaluating the decisions one made while performing an action. Hierarchical levels of reflection are observed in reflecting on action. Grossman (2008) believes in at least four levels of reflection along a continuum, ranging from descriptive accounts to varying levels of mental processing to transformative or intensive reflection. Other scholars suggest an increasing complexity such as reporting, responding, relating, reasoning, and reconstructing to define it (Marcos et al., 2009). However, most scholars agree that reflection is deliberate, purposeful, cognitive, and metacognitive thinking, which results in people improving their professional practice (Sellars, 2013; Yesilbursa, 2011). Kolb (1984) believes experiential learning is a sequential activity during which students achieve a broader understanding of the subject matter and become capable of generalizing new knowledge and putting it into further action. Thus, reflective learning is a deliberate process of cycles of inquiry in which

learners move between action and reflection to understand a concept (Ramsey, 2006), resulting in a deep understanding of new concepts.

Reflective Learning Models

Several reflective learning models have been proposed based on Dewey's viewpoints on reflection. A model that has a vital role in understanding reflective learning is Kolb's (1984) four-stage experiential learning model, consisting of four stages: (a) *experience* (Concrete Experiences), meaning that all individuals have the opportunity to start the learning cycle in any situation or place, (b) *reflect* (Reflective Observation) which involves thinking about what a person has done and experienced, (c) *conceptualize* (Abstract Conceptualization) which is making a hypothesis about one's experiences, and (d) *plan* (Active Experimentation), that is, testing the hypothesis that a person has adopted. Kolb's learning model is cyclical, and the end of one cycle is related to initiating a new one. For Kolb, learning is a cognitive process, and individuals build knowledge based on their experiences with the environment rather than instruction. The challenges they encounter shape their learning process, and they pass the stages of action, reflection, feeling, and thinking. The advantage of Kolb's model over other models is that it considers learning styles and individual preferences in learning (Kolb & Kolb, 2009).

Other reflective models that have played a vital role in constructing associations between experience, learning, and reflection are Boud et al.'s triangular representation (1985), Gibbs' reflective cycle (1988), and Atkins and Murphy's (1993) cyclical model. Another example of a reflective model is Moon's (2004) five-stage reflective learning model. For Moon, *noticing*, *making meaning*, *making sense*, *working with meaning*, and *transformative learning* are significant in reflective learning. He asserts that without noticing, learning cannot happen; in making meaning, contextualization is vital, and making sense is equal to comprehension. Students gradually understand meaning and probably change their overall understanding by analysis.

However, some other models have developed reflective models with different dimensions. For instance, Black and Plowright (2010) constructed a multi-dimensional model of reflection consisting of "the source, target, and purpose of reflection" (p. 256). They argue that the reflective process could occur through written and internal dialogue with "self." Davys and Beddoe's (2009) reflective learning model of supervision rests on "the premise that supervision is a forum for learning and that the main vehicle for learning is reflection" (p. 920). Ideas and understanding are synthesized in the transformative learning stage, resulting in students' ability to evaluate the processes that lead to new knowledge. In a more recent model, Jasper (2013), inspired by Kolb, proposes three stages of experience, reflection, and action for reflective learning and argues that individuals' experiences (positive or negative) provoke reflection and lead them to take action.

Reviewing the models indicates that although they may portray different stages for reflective learning, all share three vital stages: experiencing a challenging situation, reflecting on the situation to solve a problem, and learning from the experience by evaluating it. All models suggest that reflection contributes to learning and boosts the impact of teaching on learning. Thus, examining students' reflection levels by developing a scale can illuminate the processes they follow in reflective learning.

Measuring Reflective Learning

To measure reflective learning, some researchers have employed journal writing in different fields, such as medicine (Pena-Silva et al., 2022; Rogers et al., 2019), engineering (Aryani et al., 2017), management (Gray, 2007; Loo & Thorpe, 2002), and teaching (Sabah & Rashtchi, 2016; Wallin & Adawi, 2018). Some others have focused on developing validated tools to contribute to understanding the "multi-dimensional nature" of reflective learning (Black & Plowright, 2010, p. 246). One such study was Kember et al.'s (2000), through which they developed a valid questionnaire using confirmatory factor analysis. Kember et al. extracted four factors for reflective learning: habitual action, understanding, reflection, and critical reflection, examining the extent to which students engage in reflective thinking in professional preparation courses. In another study, Peltier et al. (2005) developed a standard scale to measure four identified levels of reflection hierarchy (habitual action, understanding, reflection, and intensive reflection) of MBA program students. However, the authors suggested further studies using structural equation modeling to discover the relationships between several variables in reflective learning.

Colomer et al. (2013) also developed a Self-Reported Reflective Learning Questionnaire to examine students' views on teaching methods. The researchers were interested in finding the relationship between the participants' responses to the questionnaire and their experience, knowledge, self-reflection, and self-regulation. Besides, they intended to discover the students' difficulties in integrating reflective learning methodologies and learning processes.

Similarly, Min and Park (2019) intended to measure upper-secondary learners' reflective attitudes toward conversation. To this end, they constructed a 12-item questionnaire under the three constructs: thoughtful action, content and process reflection, and premise reflection. The study's results showed that the instrument measured participants' reflective attitude toward conversation; however, answering the questionnaire during or after conversation affected the level of reflective thinking.

Another way to explore the nature of reflective learning is by using open-ended questionnaires. For example, Bell et al. (2014) analyzed 150 participants' responses to four open-ended questions to examine whether they could change their viewpoints in favor of reflective thinking. Feng (2016) also developed an open-ended scale for measuring learners' intercultural competence, employing Kolb's four-stage learning cycle. The researcher provided a detailed description of the participants' answers to the open-ended questions (qualitative) and compared respondents' pre and post-performances on a survey.

However, none of the scales discussed so far was intended to explore different aspects of reflective learning techniques, such as cognitive, meta-cognitive, evaluative, and the like, to understand what occurs in the learners' minds and behavior while attempting to learn a new concept. Besides, the instruments were not designed and employed among EFL/ESL learners.

Thus, the current researchers found it logical to construct a Reflective Language Learning Model comprising all learning strategies involved in the process of language learning activities. The objectives of the present study were twofold: Firstly, constructing a reflective language learning instrument, and secondly, extracting a model of reflective language learning that can be used by language learners, teachers, and researchers in future studies.

METHOD

Constructing the Item

The researchers followed the stages proposed in the literature to develop a reflective language learning questionnaire model in the Iranian EFL context (Dörnyei, 2003, 2007; Coombe & Davidson, 2015). In the first step, the researchers reviewed the related literature (Dewey, 1993; Schön,1983, 1987; Kolb, 1984; 1994; 2005) to collect definitions, explanations, and concepts on the nature of reflection and reflective learning. Then, they reviewed several models (Atkins &Murphy,1993; Boud et al.,1985; Gibbs, 1988; Kolb, 1984, 1994; Moon, 2004) to understand reflective learning processes conceptualized by researchers. At this stage, the components of reflective learning were discovered. Kember et al.'s (2000) study provided a picture of different reflective and adult learning concepts. Peltier (2005) and Colomer (2013) helped discover the reflection/non-reflection dichotomy and the different views on reflection. The researchers detected some general themes at each stage and then attempted to break them into smaller components. The result was to identify 358 concepts, definitions, and activities for reflective language learning.

The researchers explored experts' opinions regarding reflective learning in the next step. They extracted seven interview questions and asked a panel of five male and female applied linguists with over twenty years of experience teaching at the university level (two professors and three associate professors) to rate them as "essential," "useful but not essential," and "not necessary" (Ayre & Scally, 2014). All experts agreed that four questions would be essential, and three were unnecessary. Content Validity Ratio (CVR) was calculated for the questions, indicating that the questions were crucial. Then, interviews were conducted with the same five experts on four validated questions (see Appendix A). Each interview session took about 45 minutes. The interviews were recorded, and the themes were extracted following a deductive approach (Bingham & Witkowsky. 2022). First, broad themes related to reflective learning were extricated and then categorized to obtain a body of experts' viewpoints. In the next step, the themes that overlapped with the concepts in the literature (at the first stage) were located, classified, and reduced in number. Repeating the procedure several times decreased the number of items to 50. After transforming the concepts into statements and revising them, the panel of experts re-examined them to construct the questionnaire draft for the pilot study.

Participants

In the first phase, 100 EFL learners (34 males and 66 females), selected based on convenience sampling, participated in piloting the newly developed questionnaire. Their age ranged between 20 and 45. All participants studied TEFL at the university in different semesters (from the 1st to the 8th). The participants' characteristics in the piloting phase were similar to the target group for whom the questionnaire was designed.

In the second stage, 398 participants were selected based on convenience sampling. They signed an informed consent and agreed to take an Oxford Placement test two weeks before answering the questionnaire to let the researchers know their English proficiency level. Then, for construct validation of the questionnaire, they answered the newly developed questionnaire. Table 1 shows their demographic information.

Piloting the Questionnaire

A primary step in developing a questionnaire is field testing, which refers to piloting with a group of respondents similar to the target population (Dörnyei, 2007). Thus, the researchers administered the 50-item reflective language learning questionnaire to the 100 participants (as explained above). Then, they entered the data into SPSS to compute its reliability via Cronbach's α, which appeared to be .943 (Table 2).

However, after examination, items 36, 43, and 46 were removed due to the low values (<.3) of corrected item-total correlations (Table 2). The analysis of the remaining 47 items, with corrected item-total correlation values over .3, showed that Cronbach's α value was .946 (Table 3), indicating an acceptable internal consistency.

Table 1

Participants' Characteristics in the Second Phase

Gender	
Male	257
Female	128

Learning Context	
University Students	322
Language Institutes Learners	63

Proficiency Level	
A2	90
B1	89
B2	93
C1	65
C2	61

Age Range	
20-24	184
25-29	56
30-34	16
35-39	20
40-44	16
45-49	14
50 or more	10
Not mentioned	69

Table 2

Item Analysis for the 50-item Questionnaire

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted		Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item 1	.516	.942	Item 26	.412	.942
Item 2	.574	.941	Item 27	.627	.941
Item 3	.429	.942	Item 28	.555	.941
Item 4	.459	.942	Item 29	.575	.941
Item 5	.370	.943	Item 30	.473	.942
Item 6	.460	.942	Item 31	.522	.942
Item 7	.486	.942	Item 32	.470	.942
Item 8	.470	.942	Item 33	.566	.941
Item 9	.474	942	Item 34	.613	.941
Item 10	.573	.941	Item 35	.447	.942
Item 11	.405	.942	Item 36	.107	.945
Item 12	.551	.942	Item 37	.618	.941
Item 13	.443	.942	Item 38	.529	.942
Item 14	.553	.942	Item 39	.505	.942
Item 15	.412	.942	Item 40	.478	.942
Item 16	.628	.941	Item 41	.481	.942
Item 17	.547	.942	Item 42	.483	.942
Item 18	.477	.942	Item 43	.205	.944
Item 19	.511	.942	Item 44	.610	.941
Item 20	.523	.942	Item 45	.613	.941
Item 21	.484	.942	Item 46	.260	.943
Item 22	.527	.942	Item 47	.594	.941
Item 23	.585	.941	Item 48	.501	.942
Item 24	.449	.942	Item 49	.574	.941
Item 25	.492	.942	Item 50	.423	.942

Table 3

Item Analysis for 47-Item Questionnaire

	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Item 1	.526	.945
Item 2	.572	.945
Item 3	.437	.946
Item 4	.453	.946
Item 5	.357	.946
Item 6	.468	.946
Item 7	.486	.946
Item 8	.476	.946
Item 9	.476	.946
Item 10	.575	.945
Item 11	.411	.946
Item 12	.551	.945
Item 13	.463	.946
Item 14	.577	.945
Item 15	.426	.946
Item 16	.630	.945
Item 17	.544	.945
Item 18	.462	.946
Item 19	.524	.945
Item 20	.528	.945
Item 21	.489	.945
Item 22	.533	.945
Item 23	.587	.945
Item 24	.458	.946
Item 25	.498	.945
Item 26	.409	.946
Item 27	.623	.945
Item 28	.572	.945
Item 29	.589	.945
Item 30	.462	.946
Item 31	.517	.945
Item 32	.473	.946
Item 33	.570	.945
Item 34	.607	.945
Item 35	.438	.946
Item 36	.618	.945
Item 37	.526	.945
Item 38	.493	.945
Item 39	.468	.946
Item 40	.482	.945
Item 41	.493	.945
Item 42	.618	.945
Item 43	.620	.945
Item 44	.585	.945
Item 45	480	.946
Item 46	.574	.945
Item 47	.429	.946

Validating the Questionnaire

After ensuring its face validity, computing the reliability indices, and removing redundant items, the 47-item scale was administered to 398 participants to gather data for exploratory and confirmatory factor analyses. Exploratory Factor Analysis (EFA) draws on various techniques to uncover the underlying structure and extract latent factors (Pallant, 2007). Confirmatory Factor Analysis (CFA) tests whether the data fit a hypothetically constructed model. After performing EFA, the number of items was reduced to 43. Afterward, the researchers ran a CFA to confirm the extracted factors. Linear Structural Relations Software (LISREL) was used to perform Structural Equation Modeling (SEM). The developed model was verified in the CFA. The following sections present the different steps in detail.

RESULTS

Exploratory Factor Analysis (EFA)

EFA started with data cleaning by discarding 13 questionnaires due to incomplete answers and running data analysis with 385 questionnaires. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy value (.948, beyond .60) and Bartlett's Test (p<.001) verified the appropriacy of the data for factor analysis (Table 4).

Principal Component Analysis (PCA) was used to run EFA as the most commonly adopted approach. A factor analysis through varimax rotation was conducted on the underlying construct of the 47-item questionnaire. As Table 5 shows,

Table 4

KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.948
Bartlett's Test of Sphericity	Approx. Chi-Square	9470.951
	df	1081
	Sig.	.000

Table 5

PCA on 47-Item Questionnaire

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	17.231	36.662	36.662	17.231	36.662	36.662	5.648	12.017	12.017
2	2.335	4.969	41.631	2.335	4.969	41.631	5.221	11.108	23.124
3	1.698	3.612	45.243	1.698	3.612	45.243	4.498	9.570	32.695
4	1.558	3.315	48.558	1.558	3.315	48.558	3.963	8.431	41.125
5	1.250	2.660	51.217	1.250	2.660	51.217	3.313	7.048	48.174
6	1.188	2.528	53.745	1.188	2.528	53.745	2.494	5.307	53.480
7	1.139	2.424	56.171	1.139	2.424	56.169	1.264	2.689	56.169

Note: Extraction Method: Principal Component Analysis

SPSS extracted seven factors, with an Eigenvalue of more than 1, that explained 56.17% of the variance. Six-point Likert scales were used for each item, ranging from 1 (false), 2 (mostly false), 3 (more false than true), 4 (more true than false), 5 (mostly true), to 6 (True).

Table 6 contains the initial commonalities before rotation. The initial communalities indicate the relation between the variable and all other variables (the squared multiple correlations between the item and all other items). As evident from Table 6, all commonalities are high (>.40) and thus acceptable. Communality values for this questionnaire ranged from 0.40 to 0.70.

As Table 7 shows, seven factors load after rotating the factors in PCA. Subsequent to checking the factor loadings, items that do not load highly on any of the factors should be excluded. Items loading above .40 are acceptable. In this phase, 44 items were acceptably loaded on the seven factors, and three (6, 12, & 35) were deleted due to item loading below .40. Table 7 lists the 12 items that have the highest and lowest item loadings: factor 1 twelve items (the highest: *item 29* to the lowest: *item 34*); factor 2, twelve items (the highest: *item 42*, the lowest: *item 41*), factor 3 six items (the highest: *item 3*, the lowest: *item 5*), factor 4 six items (the highest: *item7, the* lowest: *item 18*), factor 5 four items (the highest: *item 20*, the lowest: *item 19*), factor 6 three items (the highest: *item 47*, the lowest: *item 14*), and finally factor 7, 1 item (the highest and lowest: *item 45*).

The Scree plot in Figure 1 shows a clear break between the first and second components. The Scree plot also indicates another little break after the seventh component, recommending retaining (extracting) seven components. The results suggest that the seven factors are confirmed, and the developed items are approved. Thus, the 43-item Reflective Language Learning Questionnaire (RLLQ) is a valid and reliable data-gathering instrument.

Table 8 shows the categorization of the RLLQ for the six factors and the reliability indices for each factor. The researchers excluded factor 7 since it possessed only 1 item loading (Item 45) and was problematic for reliability and confirmatory features. The items clustering under the same factor were checked for commonality among them. The result was extracting six factors: "Cognitive," "Evaluative," "Metacognitive," "Interactional," "Reflective Journaling," and "Retrospective," the details of which are explained in the discussion section. As illustrated in Table 8, the reliability of the 43-item RLLQ is .963.

Confirmatory Factor Analysis (CFA)

After gaining the six main factors by EFA (with 43 items), the researchers ran CFA to confirm the six factors. SEM was performed employing CFA-LISREL 8.0 to examine the factors underlying reflective language learning and checking item quality. Figure 2 displays the measurement model for the

Table 6

Initial Communality Values in PCA in the 47-Item Questionnaire

	Initial	Extraction
item1	1.000	0.503
item2	1.000	0.662
item3	1.000	0.635
item4	1.000	0.563
item5	1.000	0.404
item6	1.000	0.435
item7	1.000	0.638
item8	1.000	0.627
item9	1.000	0.563
item10	1.000	0.566
item11	1.000	0.562
item12	1.000	0.584
item13	1.000	0.502
item14	1.000	0.671
item15	1.000	0.490
item16	1.000	0.515
item17	1.000	0.536
item18	1.000	0.524
item19	1.000	0.668
item20	1.000	0.689
item21	1.000	0.551
item22	1.000	0.700
item23	1.000	0.692
item24	1.000	0.512
item25	1.000	0.625
item26	1.000	0.481
item27	1.000	0.571
item28	1.000	0.514
item29	1.000	0.608
item30	1.000	0.535
item31	1.000	0.567
item32	1.000	0.662
item33	1.000	0.532
item34	1.000	0.551
item35	1.000	0.485
item36	1.000	0.559
item37	1.000	0.541
item38	1.000	0.541
item39	1.000	0.414
item40	1.000	0.535
item41	1.000	0.442
item42	1.000	0.619
item43	1.000	0.583
item44	1.000	0.540
item45	1.000	0.559
item46	1.000	0.590
item47	1.000	0.611

RLLQ with standardized estimates (see Appendix B for the final version of RLLQ).

Inspecting the initial normed chi-square (CMIN/DF), PGFI, NFL, and RMEAS (Table 9) showed a relatively fit structured model falling within the acceptable range of 1 and 3. A few modifications (suggestions) were observed; however, they were ineffective and made no significant improvement in the model. The soundness of the factor structure for the Reflective Language Learning Model was examined using CFA comprising the six factors (Table 9). The CFA measurement model indicated an acceptable overall model fit: df=1.62, PGFI=0.73, NFI=0.98, and RMSEA=.054.

DISCUSSION

The researchers constructed and validated a questionnaire to answer the first research question, which addressed the main components of Iranian EFL learners' language reflectivity. Running EFA and CFA resulted in the development of a six-factor model that showed the elements of Iranian EFL learners' language reflectivity, as follows:

Cognitive Process: Items Loading on Factor 1 Capture Cognitive Strategy in Learning a Concept

Cognitive strategies include different mental processes in language learning, such as inferencing, generalization, deductive learning, monitoring, and memorization (Oxford, 2017; Richards & Schmidt, 2002). Similarly, in the items clustered around this factor, learners are involved in some mental activity, such as conceptualizing learning experiences by thinking and questioning about learning processes and procedures used in learning (items 9, 10, 32), thinking about learning materials to improve learning (items 13, 14, 15, 19,

Table 7

Rotated Factor Matrix[a] in PCA in the 47-Item Questionnaire

47-items	43-items	Component						
		1	2	3	4	5	6	7
Item29	Item27	.670						
item27	item25	.654						
Item25	Item23	.647						
Item33	Item31	.567						
Item24	Item22	.560						
Item21	Item19	.532						
Item10	Item9	.507						
Item17	Item15	.479						
Item11	Item10	.476						
Item15	Item13	.474						
Item16	Item14	.463						
Item34	Item32	.455						
Item42	Item39		.663					
Item40	Item37		.623					
Item43	Item40		.622					
Item44	Item41		.586					
Item38	Item35		.476					
Item28	Item26		.474					
Item37	Item34		.459					
Item30	Item28		.452					
Item39	Item36		.447					
Item36	Item33		.435					
Item13	Item11		.425					
Item41	Item38		.400					
	Item35							
Item3	Item3			.704				
Item2	Item2			.701				
Item1	Item1			.654				
Item4	Item4			.611				
Item9	Item8			.557				
Item5	Item5			.450				
	Item12							
Item7	Item6				.746			
Item32	Item30				.706			
Item8	Item7				.661			
Item31	Item29				.644			

47-items	43-items	Component						
		1	2	3	4	5	6	7
Item26	Item24				.558			
Item18	Item16				.533			
	Item6							
Item20	Item18					.765		
Item23	Item21					.726		
Item22	Item20					.726		
Item19	Item17					.711		
Item47	Item43						.716	
item 46	item 42						.592	
Item14	Item12						.407	
	Item45							**.542**

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalizationa
[a] Rotation converged in 8 iterations.

Figure 1

Scree plot for RLLQ in PCA

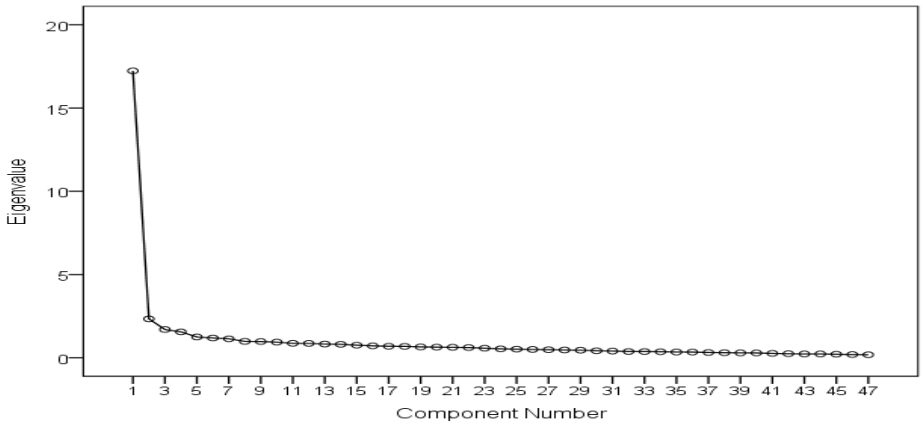

Table 8

Six Factors of 43-Item RLLQ with the Related Reliability Indices

Factors	No. of Items	Cronbach's Alpha	Reliability Value
1) **Cognitive** (Items 9, 10, 13, 14, 15, 19, 22, 23, 25, 27, 31, 32)	12		0.906
2) **Evaluative** (Items 11, 26, 28, 33, 34, 35, 36, 37, 38, 39, 40, 41)	12		0.896
3) **Metacognitive** (Items 1, 2, 3, 4, 5, 8)	6		0.815
4) **Interactional** (Items 6, 7, 16, 24, 29, 30)	6		0.748
5) **Reflective** (Items 17, 18, 20, 21)	4		0.839
6) **Retrospective** (Items 12, 42, 43)	3		0.687
Total Questionnaire	43		0.963

Figure 2

Reflective Language Learning Model with Standardized Estimates in RLLQ

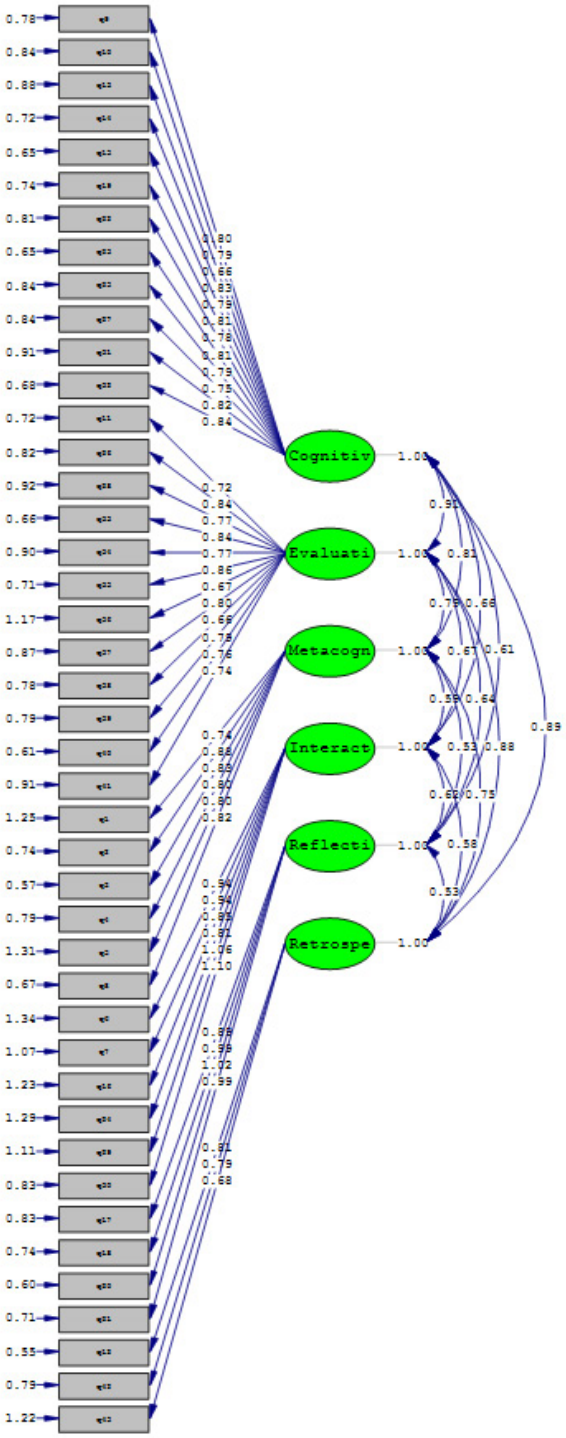

Table 9

Model Fit Analysis Summary

CMIN/DF (1 ≥, ≤ 3)	PGFI (≥ .60)	NFI (≥ .90)	RMSEA (≤ .06)
1.62	.73	.98	.054

22, 23, 27), internal self-dialog to retain information (item 31), thinking about learning processes and moving between actions repeatedly to gain new understanding (item 25). Therefore, it was named "Cognitive Factor."

Evaluative Activity: Items Loading on Factor 2 Deal with Evaluation

Richards and Schmidt (2002) consider self-evaluation as "checking one's own performance on a language learning task after it has been completed or checking one's success in using a language" (p.475). All items loaded under this factor deal with issues, including evaluating English learning experiences and making learners self-aware and thoughtful to understand and deepen their learning (items 11, 26, 28, 36, 37, 38, 40). Likewise, learners' reflecting on learning activities has improved learning (item 33), reflecting on learning materials during and after using them has facilitated learning (items 34, 35), thinking over the materials has empowered learners to become an agent of change in learning (item 41), and reflecting on learning experiences has eliminated the problems in the process of learning (item 39). Thus, it was labeled "Evaluative Factor."

Metacognitive Process: Items Loading on Factor 3 Tap into Metacognitive Strategies

Metacognitive strategies involve planning, monitoring, thinking, and evaluating a learning task during or after it occurs (Khellab et al., 2022; Richards & Schmidt, 2002). In the items loaded around this factor, learners think about learning experiences to do them better for the second time (item 1), reflect on the thinking process to improve learning procedures (item 3), reflect on learning beliefs and values to understand better to enhance their learning (items 4, 5), analyze learning experiences to get a new understanding (item 2), think over learning experiences to evaluate the outcome of learning (item 8). Therefore, it was named "Metacognitive Factor."

Interactional Activity: Items Loading on Factor 4 Deal with the Interaction Occurring Between a Learner and Themselves, Context, or any Other Person

Interaction is inevitable in any successful language-learning activity and can be used differently. Therefore, learners must have opportunities to be engaged in interactional activities in various ways, such as group discussions, collaboration, and participation (Loewen & Sato, 2018). Thus, in the items loaded under this factor, learners seek help from classmates and instructors to check their understanding (items 6 &7), raise questions to understand what has happened in the process of language learning (item 16), reflect on classmates' views to improve learning (item 24), interact with instructors, and participate in group discussions to share meaning (items 29, 30). Therefore, it was labeled "Interactional Factor."

Reflective Journal: Items Loading on Factor 5 are Concerned with Reflective Journaling

A journal is "a notebook or book in which students write about experiences both in and out of school or record responses and reactions to learning and learning activities" (Richards & Schmidt, 2002, p. 300). In this study, the effect of reflective journaling on language learning was significant, as evidenced by the four items answered by language learners. In the items clustered under this factor, learners assert that journal writing contributes to their success in language learning (item 17), stimulates new thoughts and questions for discussion (item18), gives them more significant insights into the habit of learning (item 20), and stimulates learners' reflection (item 21). Therefore, it was called "Reflective Journal Factor."

Retrospective Activity: Items Loading on Factor 6 Deal with Retrospection

ELT experts have frequently discussed the relationship of retrospection with reflective learning to reinforce professional development (Pietrzak, 2019; Van der Sluis et al., 2017). Wedell (2022) asserts, "English language teaching practices in many countries and contexts are subject to frequent change as innovation is introduced to reform teaching and learning practices (p. 1)". In this type of activity, learners refer to previous activity and scrutinize it to categorize the concepts, relate them, and find the differences or similarities to develop a new understanding and innovative idea. Thus, in the items loaded under this factor, learners think about an experience and relate new information to the previous one to improve their learning (item 12), contrast two things to find differences they have made in their learning (item 42), refer to their previous notes in different intervals to improve their learning (item 43). Therefore, it was labeled "Retrospective Factor."

The second research question focused on the validity and reliability of the newly developed instrument. The results of EFA and CFA obtained from LISREL urged the researchers to verify that the 43-item RLLQ was valid and reliable. This finding implies that future studies can employ the questionnaire and the extracted model to measure learners' degree of reflectivity.

As this study is the first attempt to construct and validate a closed-ended reflective learning scale in the Iranian context, the researchers cannot compare it with similar ones. However, compared to open-ended scales (Bell et al., 2014; Feng, 2016), RLLQ seems more beneficial to language learners since it provides a comprehensive range of activities under each factor. Besides being a closed-ended instrument, RLLQ shares the priority of such tools: it is objective and can

be answered, analyzed, and quantified with fewer problems than open-ended questionnaires to provide straightforward results (Dörnyei, 2003).

Moreover, RLLQ shows how to prepare learners to engage in reflective learning, an advantage that is not addressed in previous instruments like Colomer et al.'s (2013) Self-reported Reflective Learning Questionnaire. Besides, RLLQ explores various reflective learning strategies proposed in the literature, such as cognitive (Yesilbursa, 2011), metacognitive (Sellars,2013), and individual and cooperative activities (Cooke, 2013; Erdogan, 2019).

Most previous studies have employed journal writing to explore reflective learning (Bruno & Dell'Aversana, 2017; Hussein, 2018; Ogbuanya & Owodunni, 2015). However, the limitation of journal writing is that it lacks a "pre- and post-design" to examine the change in reflective thinking level (Kember et al., 2000, p. 382). Additionally, the approach cannot provide information about learners' strategy use, which are factors that indicate the advantage of RLLQ.

Likewise, RLLQ has advantages over most of the previous closed-ended questionnaires (Kember et al., 2000; Min & Park, 2019; Peltier et al., 2005) since none of the tools prepare students for reflective practice. What is significant in reflective learning is not determining the relationship of a variable with another or assessing the impact of a variable on another but helping learners engage in reflective activities. Thus, the result of the present study in extracting a model of reflective language learning and giving a complete picture of the various activities under each factor can be employed by language learners and practitioners in learning and teaching a concept.

Implications of the Study

Different groups can benefit from the substantial implications of the present study. The RLLQ developed in this study presents a detailed picture of the six components of reflective language learning and the activities related to each factor. Thus, on a theoretical basis, it can help educators and SLA researchers understand the dimensions of reflective learning and teaching in an EFL context. Additionally, the activities proposed in the RLLQ allow language learners to use the activities to practice reflective learning and engage in experiential learning to improve their English language proficiency. The activities can also guide students' learning and help them follow a more organized procedure in language learning. Accordingly, L2 learners can use the RLLQ to examine the amount of their engagement in reflective language learning activities to become skillful and self-regulated learners. Teachers can also use RLLQ to explore learners' reflective strategies while engaged in a learning activity. Teachers can adjust their instruction to students' language levels by pinpointing learners' weaknesses and strengths. Besides, language teachers and educators can use RLLQ as a diagnostic measure to examine learners' engagement in reflective practice.

CONCLUSION

The researchers developed a reflective language learning questionnaire to be implemented in the Iranian EFL context. The study first showed the importance of reflective learning and discussed the role of different models in shaping such learning. Then, following several procedures, the researchers developed the RLLQ to cultivate reflective learning practices and make reflective learning measurable. However, the findings might not be generalizable to contexts other than Iran. Furthermore, since the context of the study was Kurdistan, Iran, a nationwide research study can verify its applicability to other settings inside and outside the country. The researchers suggest replicating the study with students majoring in different fields, such as ESP courses. Additionally, studying learners with diverse learning abilities and considering personality characteristics can be the subject of further studies to verify the reliability and validity of RLLQ. Future studies can examine whether incorporating RLLQ can contribute to personalized learning.

DECLARATION OF COMPETITING INTEREST

None declared.

AUTHORS' CONTRIBUTION

Salman Asshabi: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing; Other contribution.

Mojgan Rashtchi: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing; Other contribution.

Massood Siyyari: Conceptualization; Data curation; Formal analysis; Funding acquisition; Investigation; Methodology; Project administration; Resources; Software; Supervision; Validation; Visualization; Writing – original draft; Writing – review & editing; Other contribution.

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APPENDIX A

Experts' Interview Questions

1. How do you define, explain, and perceive reflective learning?
2. How do you think reflective learning occurs?
3. What are the different stages of reflective learning?
4. What strategies, techniques, and procedures do you suggest for reflective learning?

APPENDIX B

This questionnaire aims to understand what shapes the reflectivity components of language learners in the Iranian context. There are no wrong or right answers. You are free on whether to write your name or not. The questionnaire focuses on your personal opinions.

Please mark the number from 1 to 6, which best describes your behavior.

1. False 2. Mostly false 3. More false than true 4. More true than false 5. Mostly true 6. True

	Items	False	Mostly false	More false than true	More true than false	Mostly true	True
1.	I deliberately step back and think about my previous English learning experience to do it better for the second time.	1	2	3	4	5	6
2.	I regularly analyze my English learning experiences to get a new understanding.	1	2	3	4	5	6
3.	I reflect on my thinking processes to improve my English learning procedures.	1	2	3	4	5	6
4.	I reflect on my learning beliefs to improve my English learning behaviors.	1	2	3	4	5	6
5.	I reflect on my life values to see whether they influence my English learning	1	2	3	4	5	6
6.	I reflect on my English learning experiences and seek help from my classmates to check my understanding.	1	2	3	4	5	6
7.	I reflect on my English learning experiences and seek help from my instructor to check my understanding.	1	2	3	4	5	6
8.	I review my English learning experiences to evaluate the outcome of my learning activities.	1	2	3	4	5	6
9.	I conceptualize my English learning experiences by thinking about the learning processes.	1	2	3	4	5	6
10.	I conceptualize my English learning experiences by questioning the learning materials.	1	2	3	4	5	6
12.	I review my English learning experiences and relate the new information to what I already knew to improve my learning.	1	2	3	4	5	6
13.	I think about my English learning experiences to meaningfully transfer them to real-life contexts.	1	2	3	4	5	6
14.	I reflect on English learning activities to help me draw on my previous experiences to understand new ideas.	1	2	3	4	5	6
15.	I reflect on English learning activities and relate the new ideas to my previous ones to support my learning.	1	2	3	4	5	6
16.	I ask thoughtful questions about the language learning process in the classroom to understand what has happened.	1	2	3	4	5	6
17.	Reflective journaling contributes to my success by providing insights into academic subjects to increase my responsibility for learning	1	2	3	4	5	6
18.	Reflective journaling has stimulated new thoughts and questions in me for discussion.	1	2	3	4	5	6
19.	I reflect on the English learning materials to identify my strengths and weaknesses to improve my learning.	1	2	3	4	5	6
20.	Reflective journaling has given me greater insights into my learning habits.	1	2	3	4	5	6
21.	I have realized that reflective journaling has stimulated my reflection.	1	2	3	4	5	6
22.	I think about my English learning process to shape future learning activities.	1	2	3	4	5	6

Items	False	Mostly false	More false than true	More true than false	Mostly true	True
23. I reflect upon the relations of the English learning materials to improve my learning.	1	2	3	4	5	6
24. I reflect on my classmates' views concerning learning materials to improve my learning.	1	2	3	4	5	6
25. I think over the language learning process and repeatedly move between action and the learning process to gain a new understanding.	1	2	3	4	5	6
26. I critically evaluate my English learning practice to deepen my learning.	1	2	3	4	5	6
27. I converse with myself about the English learning materials to rearrange and classify them to learn better.	1	2	3	4	5	6
28. I reflect on the English learning materials by referring to my written notes to improve my learning.	1	2	3	4	5	6
29. I actively interact in group discussions to analyze the English learning materials and share meaning.	1	2	3	4	5	6
30. I interact with my instructor to analyze the English learning materials and share meaning.	1	2	3	4	5	6
31. I interact with myself and retain information concerning the English learning materials through internal dialogue.	1	2	3	4	5	6
32. I conceptualize the English learning materials by thinking about the procedures I used in learning.	1	2	3	4	5	6
33. I reflect on my English learning experiences to recollect as much information as possible to understand the materials.	1	2	3	4	5	6
34. I reflect on the different aspects of English learning materials during the learning activities to facilitate my learning.	1	2	3	4	5	6
35. After the learning activities, I reflect on different aspects of English learning materials to facilitate my learning.	1	2	3	4	5	6
36. I generally think of finding another way to work on English materials.	1	2	3	4	5	6
37. I usually reflect on the errors in my English learning materials to improve learning.	1	2	3	4	5	6
38. I usually think about how I should attempt to learn English materials better.	1	2	3	4	5	6
39. Reflecting on my past experiences helps me eliminate the problems I encountered while learning English materials.	1	2	3	4	5	6
40. Reflecting on language learning activities helps me become more thoughtful and less impulsive in my following learning activities.	1	2	3	4	5	6
41. Reflection has empowered me to become an agent of change in the English learning environment.	1	2	3	4	5	6
42. I reflect on my English learning experience and think about what difference it might make in improving my learning.	1	2	3	4	5	6
43. Referring to my written notes on the previous sessions at later times improves my learning.	1	2	3	4	5	6

Please provide the following information by ticking (√) in the box or writing your response in the space.

Gender: Male □ Female □	Learning context: University □ Institute □
Age: Month, day, year	Name of the University .....
Years of studying experience	Term: .....
Marital status: Single □ Married □	