Research Paper

Journal of Language and Translation
Volume 13, Number 4, 2023, (pp.27-45)

Teaching Writing Assessment: Does Metacognitive Awareness-Raising Work?

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Received: November 06, 2022 Accepted: March 09, 2023

Abstract

The present quasi-experimental study with a non-equivalent control group pretest-posttest design investigated the effects of metacognitive awareness on developing Iranian EFL learners' assessment ability. Forty-one male and female upper-intermediate level learners in two intact classes from an English institute in Tehran province were selected based on convenience sampling. The classes were randomly assigned to the Cognitive-based Assessment Instruction Group (CAIG) and Metacognitive-based Assessment Instruction Group (MAIG). A general proficiency test administered before the treatment verified the participants' homogeneity. Metacognitive Awareness Writing Questionnaire and Motivated Strategies for Learning Questionnaire were also administered before and after the study to measure participants' metacognitive awareness level and self-regulation. MAIG used metacognitive strategies such as planning, monitoring, and revising to assess English essays. CAIG performed assessments based on cognitive strategies and a Writing Rubric. The participants' improvement in assessment was measured every other session during the treatment. After the treatment, the participants took two writing posttests (rehearsed and unrehearsed writing topics). Multivariate Analysis of Variance (MANOVA) results showed MAIG outperformed CAIG in both post-tests, and raising metacognitive awareness could significantly enhance the participants' assessment ability. The Repeated Measures Analysis of Variance (RM-ANOVA) and Analysis of Covariance (ANCOVA) revealed that MAIG's performances were significantly better than CAIG on seven writing assessments. MAIG's self-regulation was also significantly higher. The study has implications for materials developers, EFL teachers, and syllabus designers to focus on raising metacognitive awareness in writing assessment.

Keywords: Cognitive-based Assessment Instruction; Metacognitive-based Assessment Instruction; Self-regulation; Writing Assessment

INTRODUCTION

The demands of the 21st-century necessitate learners to engage in the learning process actively (Begum & Liton, 2018). The burden of responsibility to make learners aware of learning strategies and problem-solving is on teachers' shoulders. Teachers should encourage learners to share their progress, cognitive procedures, and thinking to recognize the learning obstacles and improve their learning process (Farahian, 2017; Hartman, 2001). In this regard, learners should receive help to

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develop metacognitive awareness ability. They should focus on the language learning process and ponder their thoughts.

Cognition versus Metacognition

The concepts of cognition and metacognition are different, although they are closely connected and overlap. The line of demarcation between them is also ambiguous. Cognitive strategies essentially deal with mental operations or processes, including knowing, remembering, judging, problem-solving, and decision making that assists learners in acquiring new information and performing specific learning tasks. Metacognition has become quite fashionable in contemporary cognitive psychology. It refers to the mental process or the ability of learners to be aware of their knowledge. Metacognition helps learners regulate, monitor, and control their learning and cognitive processes and become more successful learners, even in their future profession (Xiao, 2007). Metacognition signifies thinking and knowing what one knows and what does not know (Flavell, 1979). It has been employed to draw knowledge about how individuals perceive, remember, think, and act (Beiki et al., 2020). Flavell (1979) divides metacognition into two categories: metacognitive knowledge and metacognitive regulation. The first category of *metacognitive knowledge* is the knowledge that helps control cognitive processes. He illustrates *metacognitive regulation* as the strategy which allows learners to accomplish the task well through monitoring, planning, and evaluating. Metacognition is required to comprehend how a task will be accomplished, whereas cognition is needed to complete a task (Hartman, 2001). This definition indicates that, although cognition allows learners to operate normally, metacognition takes it a step further by allowing learners to gain more awareness and active control over their cognitive processes. Thus, in most cases, metacognition comes before a cognitive action. In general, the cognitive process is more limited in scope and serves as an auxiliary strategy for conducting metacognitive strategies.

Application of Metacognitive Strategies to Writing Assessment Instruction

Assessing writing performance is a subjective judgment, and lack of assessment literacy on ELT teachers and students poses challenges and complicated procedures for writing skills. Although the primary purpose of assessment is to measure learning outcomes, teachers would rather consider measuring what students have truly mastered, examining what students did and why they did so, and how they got to the finished product. It is also essential to know how learners came to their choices, such as selecting a word or a structure while writing. Metacognitive processes or the knowledge of making conscious choices is a rare practice in this regard.

Incorporating metacognitive strategies in teaching writing assessment is extremely important because learners tend to become immersed in the assessment task and constantly monitor their progress. Implementing metacognitive strategies helps learners shift from passive to active learners engaged in the assessment process and be aware of improving their learning assessment. When learners get engaged in metacognitive strategies, they employ monitoring, analyzing, and evaluating, which belong to higher-order thinking skills (Rashtchi & Khoshnevisan, 2020). Thus, they can adopt strategies to perform the assessment task. Proper training in writing assessment will help learners develop inner criteria for accurate judgment for evaluating writing tasks. The researchers of the present study assume that training in metacognitive procedures will contribute to the assessment of writings and ultimately will result in learners' autonomy and self-regulation. In this regard, to be an effective assessor, a learner should possess not only task-specific knowledge and abilities but also metacognitive awareness and knowledge.

The word metacognition was coined by Flavell (1976) to characterize the knowledge and awareness of the metacognitive process, cognitive strengths and weaknesses, and self-regulation that learners bring to a task. The history of metacognitive research represents a natural extension of Vygotsky's social constructivism theory (1978), referring to inner-

speech or something that happens in interactions among students and teachers. The current study borrowed the Vygotskian classroom illustration of the zone of proximal development, which embraces learners' ongoing knowledge construction through direct instructions, social interactions, and support from others (scaffolding). In this view, learners need to perform tasks under the teacher's guidance to internalize them and gain the ability to apply them automatically. Learners' gradual shift toward independence with the help of the teacher's and peers' interaction and feedback was the core of instruction in the current study.

Following the evolution of metacognition in second language teaching and learning and its role in learning different language skills, metacognitive awareness is a significant attribute affecting both the process and the product in L2 writing (Cer, 2019; Farahian, 2017). Since writing ability is a crucial skill in education, it generates various benefits for the learners in the academic areas, communication, and self-expression. In line with such a fundamental role for writing both in the first or foreign language, researchers (e.g. Cer, 2019; Dinsmore et al., 2008; Maftoon et al., 2014) have focused on metacognitive strategies and writers' thinking processes. Metacognitive instructions are crucial in teaching language skills and sub-skills and have been the focus of several studies (e.g. Cer, 2019; Maftoon et al., 2014; Rashtchi & Khani, 2010; Xiao, 2007). However, their use in assessing students' writing is almost overlooked, and studies focusing on the role of metacognition in writing assessment are scant. In other words, metacognitive awareness-raising is typically seen as a means of teaching writing, not assessing writing. Thus, the present study explored the effect of raising metacognitive awareness on Iranian EFL learners' writing assessment.

The significance of the present research lies on two grounds. First, the current study has a novelty in focusing on writing assessment through raising metacognitive awareness. It can clarify the application of metacognitive awareness in writing assessment ability. Second, it can deepen EFL learners' and language teachers' understanding of the benefits of raising metacognitive awareness.

Metacognition should be taught, modeled, practiced, discussed, and injected into every part of the learning process through goal setting, scaffolding, discussion, thinking aloud, planning, monitoring, and revising strategies foster assessment (Chanski, 2015). As mentioned earlier, most studies in the EFL setting concentrated on the role of metacognition awareness-raising on writing ability (e.g. Beiki et al., 2020; Teng et al., 2021).

However, after receiving metacognitive strategy instruction, learners' writing assessment ability was rarely considered. Thus, the current study sought to examine the efficiency of teaching metacognition and evaluate EFL students' attainment in assessing essays. In this regard, Oudman et al. (2021) investigated how and whether self-assessment could foster school learners' regulation and monitoring accuracy. The findings showed that learners' monitoring and evaluation are related, and self-assessment can be a beneficial tool to improve learners' monitoring and evaluation accuracy.

They concluded that while problem-solving tasks play a vital role in the educational system, such as writing assessment, generally, little consideration has been paid to self-monitoring, particularly self-assessment, when practicing with problem-solving tasks (Oudman et al., 2021). In this vein, Desoete (2008) argues that metacognition encompasses a part in common with intelligence; however, planning measured with teacher assessment is at a higher level of intelligence. She concludes that experienced teachers can play a significant role in fostering learners' assessment, specifically regarding planning strategy (Desoete, 2008). In addition, McMillan and Hearn (2008) studied metacognitive strategies such as self-regulation and self-monitoring to examine their strengths on learners' autonomy, self-efficacy, and confidence development. As a dynamic process, they found that self-assessment enforces students to self-monitor, self-evaluate, and recognize corrections to learn.

The current study aimed to probe how metacognitive awareness strategies would affect EFL Iranian learners' writing assessment. The

purpose was to explore the effects of cognition and regulation (as metacognitive strategies) for fostering thinking and raising learners' awareness in writing assessment. Accordingly, the researchers focused on the significant contributions of metacognitive awareness and writing assessment based on Flavell's (1979) two-dimensional metacognition framework, including *metacognitive knowledge* and *metacognitive regulation*. Furthermore, in this study, the researchers probed both groups' performances in writing assessment via analyzing the repeated measurement in cognitive and metacognitive-based instructions. On the other hand, the researchers intended to reveal to what extent metacognitive and cognitive-based instructions affect learners' self-regulation. Accordingly, this research aimed to answer the following research questions:

RQ1: *To what extent do metacognitive-based and cognitive-based assessment instructions affect the writing assessment of EFL learners?*

RQ2: *Is the metacognitive awareness-raising group's responses to MAWQ different from the cognitive-based assessment instruction group?*

RQ3: *To what extent do the cognitive-based and metacognitive-based instructions affect the writing assessment of EFL learners from time 1 to time 7?*

RQ4: *Do metacognitive-based and cognitive-based assessment instructions influence learner self-regulation?*

METHODS

Participants

Forty-one Iranian upper-intermediate EFL students in two intact classes were selected from an English language institute in Tehran province based on convenience sampling. The participants were 27 females and 14 males whose ages ranged from 17 to 26. Their educational program had placed them in two different intact classes in advance, one class was randomly allocated to the Cognitive-based Assessment Instructional Group (CAIG, n=20) and the other to the Metacognitive-based Assessment Instructional Group (MAIG, n=21). An English Proficiency Test (EPT) verified that the learners' language proficiency was upper-intermediate or B2 (CEFR). Only those with one standard deviation above or below the mean were selected based on the EPT results. Participants took part in an EFL course held two sessions each week for 14 sessions. It is worth mentioning that the researchers presented a detailed explanation of the study and offered a consent letter to the supervisor of the institute. The participants were unaware of participating in a study to control the Hawthorne effect.

Materials and Instruments

English Proficiency Test (EPT)

The first instrument was an English Proficiency Test (EPT) with reading and writing sections extracted from the Cambridge Preliminary English Test (PET) (2016) to determine the participants' homogeneity. The test had 42 items in eight subsections that tested reading comprehension and writing ability. The reliability of the test computed via KR-21 was .75.

Metacognitive Awareness Writing Questionnaire (MAWQ)

The second instrument was the Metacognitive Awareness Writing Questionnaire (MAWQ) used before and after the treatment for both study groups to measure EFL learners' metacognitive awareness level. MAWQ, developed by Farahian (2017), is based on Flavell's (1979) two-dimensional metacognitive model formed. The MAWQ addresses knowledge of cognition and regulation. It embraces 36-item statements with nine subcategories on a five-point Likert scale (accessible in Farahian, 2017). The MAWQ is used to assess knowledge of cognitive strategies: declarative knowledge (task knowledge), declarative knowledge (person

knowledge), procedural knowledge, and conditional knowledge. It also measures metacognitive regulation strategies, which consist of five subclasses: (a) planning (goal setting), (b) monitoring (assessment of learning and strategy), and (c) general strategies, (d) evaluation (analysis of performance and strategy effectiveness), and (e) revision (strategies of finding and removing performance errors and

correcting comprehension). The MAWQ has undergone Confirmatory Factor Analysis (CFA) and has been probed for the construct validity of the knowledge of cognition. The questionnaire's reliability computed via Cronbach's alpha was estimated to be .76 by Farahian (2017).

Motivated Strategies for Learning Questionnaire (MSLQ)

The third instrument was the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich & De Groot, 1990) utilized before and after the study to measure participants' self-regulation related to their specific course. Pintrich and De Groot (1990) developed a 56-item with a seven-point Likert scale: 1 = not at all true of me to 7 = very true of me. In this study, 12 items were excluded, and the MSLQ focuses on two key research targets only by 44 items, available in Pintrich and De Groot (1990).

The factor analysis led to five components: Self-Efficacy, Cognitive Strategy Use, Self-Regulation, Intrinsic Value, and Test anxiety. Based on the factor analysis results, the learning strategies section was divided into two scales: Cognitive Strategy Use and Self-Regulation. The cognitive strategy use scale ($\alpha = 0.83$) included 13 items related to the use of different cognitive and metacognitive strategies. The Self-regulation scale ($\alpha = 0.74$) consisted of nine items about the metacognitive items (planning, monitoring, evaluation, and regulation). Internal validity was determined by factor loading from factor analysis.

Writing Pretest and Posttests

Three essays written by some EFL learners in other institutes were the next instruments employed to measure the participants' writing assessment before and after the treatment. One writing was used as the pretest and two as posttests. One of the posttests had the same topic, *"Describe a memorable day or experience,"*; however, it was not written by the same person in the pretest. The second posttest was on an unrehearsed topic to control the practice effect and to examine the participants' writing assessment ability after a time interval: *"Describe the characteristics of a good friend."*

Besides, the researchers selected four essays (written by EFL students outside of the current research context) during the treatment to examine the participants' development in writing assessment. The topics were selected from the participants' textbook, *Objective First of Cambridge University Press* (Capel & Sharp, 2014). The topics of the essays were:

- *Some people say the fashion industry has a bad effect on people's lives.*

  Do you agree?
- *Every country in the world has problems with pollution and damage to the environment. Do you think these problems can be solved?*
- *The top sports stars earn far too much money. Do you agree?*
- *Computer games are very bad for people, and they cause a lot of problems.*

  Do you agree?

Writing Rubric (WR)

An objective writing assessment scale of Cambridge English Language Assessment (2019) was used to compare the participants' assessment with the raters' assessment. The Writing Rubric (WR) consists of four subscales: content, communicative achievement, organization, and language, and the responses were marked on each subscale from 1 to 5 (Appendix A).

Procedure

The main goal of this study was to explore to what extent the ability to assess writings and examine their self-regulation could develop as the result of teaching cognitive and metacognitive strategies. Thus, the study groups practiced two different assessment instructions: MAIG experienced metacognitive-based awareness-raising, and CAIG participated in cognitive-based instruction. One of the researchers instructed the course in virtual classrooms because of the COVID-19 outbreak. Two experienced teacher-raters selected based on their similarities in credentials and years of teaching experience re-assessed the participants' essays.

Pretest

At the beginning of the experiment, the researchers administered the EPT to ensure that the participants were homogeneous. In the second session, the participants took the Metacognitive Awareness Writing Questionnaire (MAWQ) (Farahian, 2017). The third session was allotted to administering the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich & De Groot, 1990) to measure the participants' self-regulation before the treatment. In the fourth session, the teacher familiarized the group members with the different dimensions of the Writing Rubric or criteria (WR) in detail. Before the training, the participants had no specific knowledge about the scoring essays; therefore, the teacher did it. The teacher went through the various components of the WR and explained to the participants how to use them. Thus they practiced using the WR under the teacher's guidance. In the fifth session, the teacher assessed a writing sample as a model focusing on content, communicative achievement, organization, and language used in writing and scored it based on WR as a benchmark for the following writing assessments.

Afterward, learners assessed an essay (Describe a memorable day or experience) according to the WR. The essay was written by a learner with similar characteristics to the participants but not studying in the same institute. The purpose of selecting an identical essay for the class instead of self-assessment (assessing their essay) was to examine how the participants' assessment ability developed and how they responded to the same composition. It is worth considering the two writing teachers as assessors who gave scores to the learners' assessments in both groups.

Cognitive-based Assessment Instruction (CAI)

In cognitive-based assessment instruction, the focus is on the outcome and whatever can be done to ensure the outcome; then final score receives more attention than attaining improved understanding. The CAI goals focus on fair judgment rather than enhancing awareness. In addition, in this instruction, the teacher presents some cognitive strategies, the participants set the goals through mind mapping without discussion and articulation of assessment. The CAIG's participants made external attribution based on help from others like teachers and peers or luck.

In cognitive-based instruction, monitoring and evaluation is external, unguided, and controlled practice. In the CAI group, the researchers followed three phases in the following sessions after presenting the pretests:

Phase 1 (Mind Mapping): In this phase, the researchers presented explicit instruction of the writing assessment instruction based on cognitive writing strategies and scoring criteria or WR. Cognitive strategies are steps learners utilize to get new information and apply it to writing assessments.

The WR was guidelines for assessing and judgment and considered the benchmark for interpreting learners' assessment level. In this phase, the researchers first prepared and helped the learners identify what they knew about assessment by activating their background knowledge and mind mapping.

From sessions six to twelve, the teacher focused on different cognitive structures involved in the assessment. Therefore, in the sixth session, the teacher first developed the learners' understanding of writing assessment knowledge which described language rules by notifying them to consider the linguistic knowledge, structure, purpose of writing, theme, and even the layout of the essay. The teacher taught prewriting steps such as goal setting and mind mapping to reach a goal in writing assessment. The teacher helped the participants locate and organize different ideas in mind mapping the essays, such as listing, brainstorming, memory, noticing or attention, and decision making. Then they scored the essay employing WR criteria through focusing on mapping.

Phase 2 (Note-taking and predicting): In this phase, the researchers set four goals for practical writing assessment: unity, support, organization, and error-free sentences. The learners learned to take notes or write whatever the teacher taught them in this session. They also learned to use their minds to think and predict

the ending or the beginning of the assessment. The participants assessed the first essay via WR, considering the four goals. In sessions seven and eight, based on the teacher's cognitive-based instruction, the participants had to decide which ideas stated in the essay were the most exciting and relevant to the topic. They evaluated the essay's format, including the topic sentence, supporting sentences, and concluding paragraph. Finally, the participants assessed and scored the essay based on WR.

Phase 3 (Revising & Reflecting): In sessions nine and ten, the participants focused on reviewing and revising the structure and content of the essay. Consequently, CAIG participants focused on writing mechanics such as spelling, grammar, vocabulary, and punctuation in this stage rather than text structure and content such as sentence structure, paragraphing organization, and communicative achievement. The learners practiced revising and modifying the different aspects of the essay based on the structure and content, organization, communicative achievement and scored via WR. During the 11th and 12th sessions, the reflection strategy was practiced. The teacher asked the participants to reflect on what they had learned or understood, add more values, and focus on the positive and negative points they gained about the assessment. Reflecting and overhauling the structure and arrangement of paragraphs is a vital aspect of the writing assessment in the revising stage. The results showed that the CAIG's participants could assess the writing tasks concerning the criteria WR. It is worth mentioning that cognitive-based assessment instruction embrace strategies employed to solve a problem rather than the strategies used to think, monitor, and control the learning assessment process.

Metacognitive-based Assessment Instructional (MAI)

In metacognitive-based assessment instruction, the focus was on improving the learners' knowledge and understanding of assessment. They practiced meaningful assessment through thinking, monitoring, evaluating, and generating solutions. The teacher consciously implemented metacognitive-based assessment instructions to enhance awareness in writing assessment so that learners could gauge their assessment as an informational rather than a judgmental matter. The goal in MAIG was not completing a task or doing an assessment but knowledge attainment. The MAIG participants' internal attributions originating from their ability and mental effort or awareness were targeted rather than external attributions, such as help from peers, as in CIAG. The following demonstrates how the teacher used guided practice and modeling and helped the participants choose, monitor, and evaluate in assessment. Like CAIG, in the first five sessions, the pretests were administered. The instruction in this group started from the sixth session. Teaching metacognitive strategies took 40 minutes each session and followed five stages based on Flavell's two-dimensional metacognition framework: *metacognitive knowledge* and *metacognitive regulation*:

Phase 1 (Metacognitive Knowledge): In the sixth session, developing the learners' awareness of *cognition* which could reveal what learners knew about their cognition process and knowledge to control their cognitive process, was emphasized. Flavell (1979) expresses three categories of these knowledge factors: person knowledge (declarative knowledge), task knowledge (procedural knowledge), and strategic knowledge (conditional knowledge).

Therefore, in enhancing declarative knowledge, the researchers first developed the learners' awareness and beliefs about themselves as a thinker or a learner concerning learners' capabilities and the factors that influence their writing assessment. In this framework, for procedural knowledge, the teacher explained the organization of an essay to inform the learners "how" to assess the written products. Learners with a high degree of procedural knowledge fulfill tasks more automatically, are more likely to possess a more extensive repertoire of strategies, sequence strategies effectively, and apply different strategies to solve problems (Lee & Mak, 2018).

Finally, the teacher informed the participants "when" and "why" strategies were

appropriate to solve the problem for improving conditional knowledge. Students had to identify goals and

- Prepare and plan for learning
- Select and use learning strategies
- Monitor strategy use
- Orchestrate different strategies
- Evaluate strategy use and learning

In the following sessions of the metacognitive-based writing assessment instruction, the researchers focused on metacognitive strategies or regulations, which refers to processes that learners use to control cognitive activities and be responsible for executing a writing assessment in terms of three main strategies: planning, monitoring, and evaluating (Ruban, 2003).

Phase 2 (Planning): In the seventh and eighth sessions, the participants received instruction on the regulation of cognition through planning. This process entails two main functions: determining what is necessary to learn and how it can be learned. In this phase, the teacher first activated the participants' background knowledge and prepared them to plan how to tackle the assessment. According to the famous theorists Piaget and Vygotsky (Matusov & Hayes, 2000), this process relates the new information to the background knowledge, called assimilation. The accommodation process refers to the change in the schema to accommodate new information. They believe that assimilation and accommodation will develop through scaffolding to learn new information. In this regard, the teacher used guided practice and selected planning strategies to involve the participants in problem-solving steps. She focused on learners' ideas and suggestions before performing the assessment task. The teacher asked questions to involve the participants in thinking about what they already knew about the strategies in writing assessment, what they needed to know, how the students would learn, and what goals they should set for themselves to achieve. The participants identified the problem in the planning procedure and chose a proper solution strategy (e.g. Beiki et al., 2020; Teng, 2019) through goal setting, group discussion, thinking aloud, problem-solving, and cooperative learning. Time restrictions, purposes, and guidelines related to the learning process were taught explicitly by the teacher. At the outset of the writing assessment, the learners were engaged in knowledge retrieval before and while writing. They needed various types of knowledge: world knowledge, rhetorical knowledge, and linguistic knowledge to plan or decide what to assess and how. The main focus of metacognitive strategic instruction required the learners to be goal-oriented. It directed the learners to share ideas via discussion, self-questioning, elaboration, thinking aloud, and selective attention. The teacher demonstrated metacognitive-based writing assessment to students, explained its importance, and helped them set positive, practical, and feasible goals. Learning goals and pre-planning helped the participants correct their misunderstandings and determine their strengths and weaknesses.

Phase 3 (Monitoring): In sessions nine and ten, the teacher taught the monitoring process as the metacognitive awareness-raising strategies. She explained how to focus on linguistic and contextual errors, distinguish irrelevant information, and identify semantic ambiguity. She also presented a model for monitoring their assessment. In this phase, the learners paid deliberate attention to what they were assessing; they were encouraged to be aware of their thinking processes and the assessment process as it happened. When monitoring and assessing, they received the teacher's feedback on their mistakes which could help them learn from their mistakes. Metacognitive or higher-order strategies for selecting and monitoring assessment decisions promote creative and critical thinking (Rashtchi & Khoshnevisan, 2020). Successful students can indicate how they think and learn, set reasonable learning goals, monitor their improvement toward their goals, and finally, organize their assessment through dealing with errors meaningfully.

Phase 4 (Evaluating): In the 11th and 12th sessions, the participants focused on evaluating and revising an essay. The participants were supposed to provide positive or negative feedback. After the assessment task, the learners were asked to reconsider their decisions to understand the quality of

their assessment. It enabled the learners to determine if they needed further practice. The learners accomplished the evaluation activities through debriefing, discussion, peer and teacher feedback, and self-questioning. In this phase, the focus was on practicing fairness in assessment. In addition, the learning responsibility gradually shifted from teacher-centeredness to learner-centeredness to facilitate learning and self-regulation.

Phase 5 (Self-regulation): The last phase involved identifying consequences of learning metacognitive-based assessment goals and strategies. The researchers expected the participants to become increasingly autonomous and self-regulated in their learning in this phase as they were aware of their strengths and weaknesses and could achieve better learning outcomes. Thus, the last strategy for metacognitive-based assessment was self-regulation. Metacognition is merely one facet of meaningful learning and is not an adequate learning tool in itself. The use of metacognition and self-regulation guided the students toward meaningful learning and goal attainment. Accordingly, the classroom instruction on metacognition helped learners monitor their thoughts. Meanwhile, it helped learners control their emotions and behaviors and become self-regulated (Hartman, 2001; Zimmerman, 2002). Some studies highlight the progressive effects of metacognitive-based instruction in EFL contexts as an alteration toward student-centered instruction (Aryanjam et al., 2021; Farahian, 2015). According to Boeree (2006), self-regulation refers to individuals' beliefs about general capabilities or knowledge to think and frofi rep in ways compatible with their learning goals. In this research, the researchers, through conducting the metacognitive-based assessment strategies, could measure the development of learners' self-regulation by MSLQ, which led them to meaningful learning and understanding. In sum, applying metacognitive strategies provided the participants with opportunities to practice higher-order thinking skills (Rashtchi & Khoshnevisan, 2020). They assist the learners in practicing, consolidating, evaluating, automating, and internalizing what they learned, which mostly includes planning, monitoring, and assessment.

Post-test

The MAIG and CAIG participants assessed two essays based on the WR. They also completed MAW and MSL questionnaires.

Data Analysis

The researchers used the Mann-Whitney U test and Multivariate Analysis of Variance (MANOVA) to compare the groups' assessment expertise and metacognitive awareness level via MAWQ before and after the treatment. Repeated Measures Analysis of Variance (RM-ANOVA) was employed to examine the participants' improvement during the treatment. The researchers also utilized the Analysis of Covariance (ANCOVA) to measure the differences between CAIG's and MAIG's self-regulation through MSLQ in the pretest and posttests.

RESULTS

The first research question addressed the effect of metacognitive awareness-raising and cognitive-based instructions on the writing assessment of the study groups. Writing assessment was measured through a pretest and two posttests administered after the treatment. Table 1 shows the skewness ratios. Since each skewness ratio over its standard error was beyond ±1.96 on the pretest, the researchers used non-parametric statistical procedures.

Table 1

Descriptive Statistics; Testing Normality of Writing Assessment

Groups		N	Skewness		
		Statistic	Statistic	Std. Error	Ratio
CAIG	Pretest	20	-1.087	.512	-2.12
	Post-Rehearsed	20	.000	.512	0.00
	Post-Unrehearsed	20	-.784	.512	-1.53
MAIG	Pretest	21	-.957	.501	-1.91
	Post-Rehearsed	21	.388	.501	0.77
	Post-Unrehearsed	21	-.744	.501	-1.49

A Mann-Whitney U test was carried out to compare the CAIG's and MAIG's mean ranks on the pretest to examine whether the groups were homogenous regarding their writing assessment ability before the treatment. The results showed that CAIG (Mdn=16.50) and MAIG (Mdn = 17.00) had very close median scores. Table 2 reveals the results of the Mann-Whitney U test (Z =-.396, p>.05, r_g =.071 representing a weak effect size), indicating no significant differences between the two groups. It also shows that the groups were homogenous regarding writing assessment before the treatment.

Table 2
Mann-Whitney U Test; Pretest of Writing Assessment

	Pretest
Mann-Whitney U	195.000
Wilcoxon W	426.000
Z	-.396
Asymp. Sig. (2-tailed)	.692

A MANOVA examined whether the two groups were homogenous regarding regulation and metacognitive strategies. The non-significant results of the Box's test (Box's M=7.88, p>.001) indicated that the assumption of homogeneity of covariance matrices was met (Table. 3). That is to say, the correlations between pretests of metacognitive knowledge and regulation were roughly equal across the two groups.

Table 3
Box's Test of Equality of Covariance Matrices; Pretests of Metacognitive Knowledge and Regulation

Box's M	7.881
F	2.481
df1	3
df2	298395.318
Sig.	.059

The mean scores of CAIG (M=3.24) and MAIG (M=3.22) on the metacognitive regulation were close. The results also showed that the two groups had almost the same means on the pretest of metacognitive strategies: CAIG (M=3.10) and MAIG (M=2.96) before treatment.

The results of MANOVA (F (2,38) =.771, p>.05, η^2=.039 representing a weak effect size), as indicated in Table 4, reveal no significant differences between the CAIG's and MAIG's overall means on the pretests of regulation and metacognitive knowledge before the treatment.

Table 4
Multivariate Tests; Pretests of Metacognitive Knowledge and Regulation

	Effect	**Value**	**F**	**df**	**Error df**	**Sig.**	**Partial Eta Squared ($\eta^{2)}$**
Intercept	Pillai's Trace	.990	1826.48	2	38	.000	.990
	Wilks' Lambda	.010	1826.48	2	38	.000	.990
	Hotelling's Trace	96.131	1826.48	2	38	.000	.990
	Roy's Largest Root	96.131	1826.48	2	38	.000	.990
Level	Pillai's Trace	.039	.771	2	38	.470	.039
	Lambda	.961	.771	2	38	.470	.039
	Trace	.041	.771	2	38	.470	.039
	Roy's Largest Root	.041	.771	2	38	.470	.039

After the treatment and to answer the first research question, a MANOVA was performed to compare the CAIG's and MAIG's means on the rehearsed and unrehearsed writing assessment posttests. The non-significant results of the Box's test (Box's M=11.72, p>.001) indicated that the assumption of homogeneity of covariance matrices was retained.

Table 5
Box's Test of Equality of Covariance Matrices

Box's M	11.724
F	3.691
df1	3
Df2	298395.318
Sig	.011

Table 6 illustrates the MANOVA results. Since the assumption of homogeneity of variances was violated, the results were reported at .01 level based on Gray and Kinnear (2012), which should be interpreted based on Partial Eta Squared using the criteria; .01=Weak, .06=Moderate, and .14=Large (Pallant, 2020). Therefore, the results ($F(2,38) = 60.86$, $p<.01$, $\eta=.762$ representing a large effect size) indicated significant differences between the CAIG's and MAIG's overall means on the posttests of rehearsed and unrehearsed writing assessments.

Table 7 shows the descriptive statistics of the groups: MAIG (M=15.14) and CAIG (M=18.00) on the rehearsed writing assessment

posttest. The MAIG's assessment is lower than CAIG and conforms with the raters' mean assessment (14.5).

The CAIG's assessment is significantly different from the two raters' ratings. This finding shows that MAIG gave lower scores to the writings and was more accurate in assessing (as the mean was closer to the raters').

Table 6
Multivariate Tests; Posttests of Writing Assessment

Effect		**Value**	**F**	**df**	**Error df**	**Sig.**	**Partial Eta Squared ($\eta^{2)}$**
Intercept	Pillai's Trace	.997	6412.76	2	38	.000	.997
	Wilks' Lambda	.003	6412.76	2	38	.000	.997
	Hotelling's Trace	337.514	6412.76	2	38	.000	.997
	Roy's Largest Root	337.514	6412.76	2	38	.000	.997
Level	Pillai's Trace	.762	60.860	2	38	.000	.762
	Lambda	.238	60.860	2	38	.000	.762
	Trace	3.203	60.860	2	38	.000	.762
	Largest Root	3.203	60.860	2	38	.000	.762

Table 7
Descriptive Statistics; Posttests of Writing Assessment

Writing Assessment Posttests	**Group**	**Mean**	**Std. Error**	**95% Confidence Interval**	
				Lower Bound	Upper Bound
Rehearsed	CAIG	18.000	.269	17.455	18.545
	MAIG	15.143	.263	14.611	15.674
Rater # 1=15 Rater # 2=14 Raters' mean=14.5					
Unrehearsed	CAIG	15.100	.384	14.323	15.877
	MAIG	11.810	.375	11.051	12.568
Rater # 1=11 Rater # 2=9					
Raters' mean=10					

The results of between-subjects-effects, as indicated in Table 8, urges the researchers to conclude that: The MAIG (M=11.80) significantly outperformed the CAIG (M=15.10) on the unrehearsed writing assessment posttest ($F(1,39)=57.65$, $p<.01$, partial $\eta^2 =.596$ representing a large effect size). The results were reported at the .01 level since the assumption of homogeneity of variances was violated. The MAIG's assessment conforms with the raters' mean assessment (10), while the CAIG's assessment is significantly different from the two raters' ratings.

Table 8
Tests of Between-Subjects Effects; Posttests of Writing Assessment

Posttest of Writing Assessment	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared ($\eta^{2)}$
Rehearsed	83.624	1	83.624	57.650	.000	.596
Unrehearsed	110.913	1	110.913	37.602	.000	.491
Rehearsed	56.571	39	1.451			
Unrehearsed	115.038	39	2.950			
Rehearsed	11352.000	41				
Unrehearsed	7604.000	41				

A MANOVA was run to compare the groups' means on the MAWQ after the treatment. The results (F (2,38)=16.69, p<.05, η2=.468 representing a large effect size) indicated significant differences between the CAIG's and MAIG's overall means on the posttests of metacognitive knowledge and metacognitive strategies (Table 9).

Table 9
Multivariate Tests; Posttests of Metacognitive Knowledge and Regulation

Effect		Value	F	df	Error df	Sig.	η^2
Intercept	Pillai's Trace	.998	10723.58	2	38	.000	.998
	Wilks' Lambda	.002	10723.58	2	38	.000	.998
	Hotelling's Trace	564.399	10723.58	2	38	.000	.998
	Roy's Largest Root	564.399	10723.58	2	38	.000	.998
Level	Pillai's Trace	.468	16.698	2	38	.000	.468
	Lambda	.532	16.698	2	38	.000	.468
	Trace	.879	16.698	2	38	.000	.468
	Largest Root	.879	16.698	2	38	.000	.468

A non-parametric test of Friedman repeated-measures ANOVA was conducted to compare the performances of the MAIG from time 1 (pretest) to time 7 to answer the third research question (Table 10). The MAIG's mean ranks on the seven writing assessments showed that the MAIG had the highest mean rank on the fifth session (MR=5.38), followed by the sixth and seventh sessions (MR=5.24) and second session (MR=4.67). The mean ranks on the first, third, and fourth sessions were 2.31, 2.55, and 2.62. The results of chi-square (χ2 (6) = 57.20, p<.05 representing a moderate effect size) indicate significant differences between the MAIG's performances on seven writing assessments. Thus, the results showed that the group's writing assessment significantly improved during the metacognitive-based assessment instruction from time 1 to time 7.

Table 10
Test Statistics; Seven Writing Assessments (MAIG)

N	21
Chi-square	57.208
Df	6
Asymp. Sig.	.000

As shown in Table 11, the rehearsed and unrehearsed posttest writing assessment scores (M=15.14 and M=11.80) had the highest compatibility with the raters' mean scores in the final session (M=14.5 and M=10). Figure 1 shows the mean ranks of the writing assessments from sessions one to seven.

Table 11
Means on Seven Writing Assessments

MAIG	Mean	Raters' mean # 1 & 2
Pretest	15.61	10
Assessment1	14.38	13
Assessment2	11.52	11.5
Assessment3	11.76	11
Assessment4	16	15.5
Post-Unrehearsed	15.14	14.5
Post-Rehearsed	11.80	10

Another non-parametric test of Friedman repeated-measures ANOVA was performed to compare the CAIG's performances from time 1 (pretest) to time 7 (posttest) to answer the research question (Table. 12). The results showed that the CAIG had the highest mean

rank on the sixth session (MR=5.78), followed by the third (MR=4.10), fifth (MR=4.05), fourth (MR=3.98), and first (MR = 3.93) sessions. The mean ranks on the second and seventh sessions were 3.48 and 2.70, respectively.

Table 12 shows the results of chi-square ($\chi 2$ (6) = 23.29, p<.05 representing a weak effect size), indicating significant but weak differences between the CAIG's performance on the seven writing assessments.

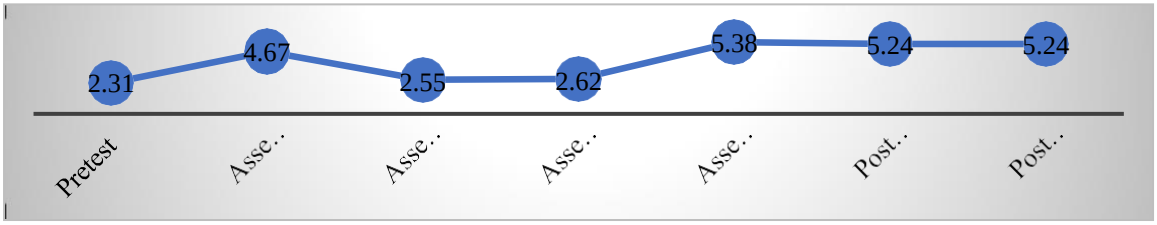

Figure 1
Mean Ranks on Seven Writing Assessments (MAIG)

Table 12
Test Statistics; Seven Writing Assessments (CAIG)

N	20
Chi-square	23.297
df	6
Asymp. Sig.	.001

As Table 13 shows, the rehearsed and unrehearsed posttest writing assessment scores (M=18 and M=15.10) are far from the raters' mean scores (M=14.5 and M=10).

Table 13
Means on Seven Writing Assessments

MAIG	**Mean**	**Raters' mean # 1 & 2**
Pretest	15.80	10
Assessment1	15.45	13
Assessment2	16.45	11.5
Assessment3	15.85	11
Assessment4	16.65	15.5
Post-Unrehearsed	18	14.5
Post-Rehearsed	15.10	10

Figure 2 shows the mean ranks of CAIG on seven writing assessments. The fourth research question addressed the effect of metacognitive awareness-raising and cognitive-based instructions on learners' self-regulation. Their self-regulation was measured through a pretest and posttest. As table 14 shows, since the ratios skewness indices were beyond ±1.96 for the pretest and posttest of self-regulation, the researchers ran a non-parametric analysis of covariance to compare the MAIG's and CAIG's means on the self-regulation posttest controlling for the possible effects of the pretest.

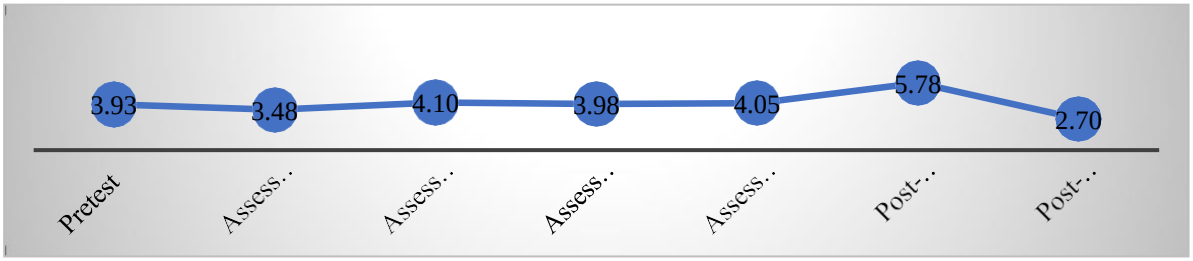

Figure 2
Mean Ranks on Seven Writing Assessments (CAIG)

Table 14
Descriptive Statistics; Testing Normality of Self-Regulation Pretest and Post-test

Groups		N	Skewness			Kurtosis		
		Statistic	Statistic	Std. Error	Ratio	Statistic	Std. Error	Ratio
CAIG	Pre-Self-Regulation	20	-.332	.512	-0.65	2.824	.992	2.85
	Post-Self-Regulation	20	-.436	.512	-0.85	2.016	.992	2.03
MAIG	Pre-Self-Regulation	21	-.429	.501	-0.86	3.832	.972	3.94
	Post-Self-Regulation	21	-.716	.501	-1.43	2.438	.972	2.51

Table 15 shows the descriptive statistics for the MAIG and CAIG on the self-regulation posttest scores controlling for the possible effects of the pretest. As the results show, the MAIG (M=108.08, SE=2.27) had a higher mean on the self-regulation than the CAIG (M=100.35, SE=2.33).

Table 15
Descriptive Statistics; Posttest of Self-Regulation with Pretest

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
CAIG	100.659[a]	2.336	95.930	105.387
MAIG	108.087[a]	2.279	103.473	112.701

a. Covariates appearing in the model are evaluated at the following values: Pre-Self-Regulation = 86.71.

The ANCOVA results (F (1,39)=8.72, p<.05) indicated that MAIG outperformed CAIG on the self-regulation posttest after controlling the pretest effect (Table 16).

Table 16
Quade Nonparametric Analysis of Covariance; Posttest of Self-Regulation with Pretest

F	df	df	P-value
8.727	1	39	.005

DISCUSSION

This study explored the effects of raising metacognitive awareness on Iranian EFL learners' writing assessment ability. The central part of this research was related to determining how raising metacognitive awareness affected assessment. The different statistical analyses led the researchers to conclude that metacognitive strategies positively, directly, and significantly affect participants' fairness and reasonableness while evaluating an essay.

The rating of an essay is much more than scoring. Mental schemata of decisions, previous knowledge, and knowledge retrieval promote assessment. From the beginning of the writing assessment, decision-making would follow upon the knowledge retrieval. Accordingly, Lane et al. (2000) consider that knowledge retrieval is a schema in long-term memory. Writing assessment is regarded as a dynamic process that does not depend only on linguistic, rhetorical, and world knowledge but requires metacognitive knowledge and regulations (Rasakumaran & Patrick, 2019).

The positive impact of metacognitive awareness-raising strategies on EFL learners' writing assessment, as the findings show, indicates that learners should formulate writing schemes to process their decision-making through verbalizing their thoughts and discussing. The findings revealed that discussions, think-aloud, collaboration with peers and the teacher, questions-answers for problem-solving, planning, monitoring, and revising strategies could effectively boost participants' metacognitive awareness. These activities could help participants understand how to access and utilize their previous and retrieval knowledge and generate a more prominent understanding. Such actions could train them to use their mental abilities to improve their decision-making while assessing. Learners' knowledge before an assessment is an integral part of the decision-making process regarding what and how they would assess it (planning strategy). During writing assessment tasks, decision-making is essential for implementing

aspects of their rhetorical plan. Such knowledge could help them revise

(monitoring and evaluating strategies) (Rolheiser & Ross, 2001). Consequently, the development and application of WR in metacognitive assessment provided meaningful evaluations. In this regard, a few scholars, such as Rolheiser and Ross (2001), argue that learners who are taught assessment meaningfully are more likely to continue problem-solving activities, are more confident in their findings, and take more responsibility for their decisions. The results support Flavell's (1979) metacognitive theory regarding two general dimensions of metacognition as knowledge and regulation. The instructions during the study in the MAWQ showed that the participants could become aware of the cognitive process involved during assessment and employ them during the evaluation. In line with Maftoon et al. (2014) and (Beiki et al., 2020) within Flavell's (1979) framework, this study indicated that employing the person, task, and strategy knowledge (metacognitive knowledge) is beneficial and could contribute to problem-solving and decision-making. The findings can substantiate the notion put forth by Chanski (2015) and Teng et al. (2021) that metacognitive strategy promotes strategy knowledge. In other words, learners who have good metacognitive knowledge are also more likely to use strategies (planning, monitoring, and revising). Furthermore, the results concerning the regulation of metacognition reveal that metacognitive strategies such as planning, monitoring, evaluation, and revision contribute to all accounts of the regulation of knowledge (Hartman, 2001). The findings concerning the beneficial effects of raising metacognitive awareness on learners' writing assessment are congruent with the results of Selpia and Purnawarman (2018), who explored the influence of indirect assessment on learners' competence ability. They reported that indirect assessment and raising learners' awareness foster them to meet the challenges. Likewise, the study of Goudarzi and Ghonsooly (2014) showed a significant correlation between metacognitive awareness and test-taking strategies in the Iranian EFL context.

The results obtained from the administration of MAWQ showed that the MAIG participants could become aware of the metacognitive knowledge and regulations. They employed them during the assessment process and showed improvement regarding self-regulation and self-correction. Previous studies indicated the role of metacognitive awareness-raising on writing. (e.g. Teng et al., 2021; Tosuncuoglu & Kirmizi, 2019). However, studies focusing on the role of metacognition in writing assessment are scant. In this regard, the findings of this research are consistent with Beiki et al. (2020), who indicated that metacognitive strategies promoted EFL learners' self-correction, interaction, and solving the obstacles in writing skills. Similar to the findings detailed by Oudman et al. (2021), the present study also revealed that metacognitive awareness strategies involved learners in problem-solving.

The repeated measurement results indicated that instruction had an indispensable role in evaluating learning and exploring the learners' improvement in writing assessment. The repeated measurements revealed changes in both groups regarding the effects of metacognitive and cognitive-based awareness instruction. This finding is in favor of research findings that advocate the role of explicit instruction in L2 learning (Luce & Kirnan, 2016; Torrance, 2007). It is important to note that the repeated measurement indicated the accuracy and stability of learners' decisions during the treatment. During the treatment, the participants showed improvement in assessment and showed sensitivity to instructions indicating that assessment is a teachable trait.

Additionally, the repeated measurement results align with Nimon and Williams's (2009) outlook about continuous assessment playing a vital role in enhancing participants' assessment ability. This finding can be helpful to researchers who work in the domain of cognitive skills. Using assessment can help learners become good decision-makers and problem-solvers. The fact that MAIG's ratings were closer to the raters' indicated the superiority of

metacognitive awareness strategies to cognitive ones. On the other hand, these results are not consistent with the study by Sayin and Kahraman (2020) when the repeated measurement in writing performance of the examined groups over time did not show any significant differences between groups. Through practicing various strategies like planning, monitoring, and revising, the metacognitive regulation process can empower and have different learning outcomes leading to selective attention, self-management, self-monitoring, self-evaluation, and cooperation. This finding is consistent with Luce and Kirnan (2016) and Clauss and Geedey (2010). Concerning the study's findings, metacognition is not only helpful in assessing but can also enhance self-regulation. It helped learners control their emotions and behaviors and become self-regulated (Zimmerman, 2002).

CONCLUSION

The current study showed that first, writing assessment through raising metacognitive awareness is defined as a dynamic process in which the learners can monitor, evaluate and identify the challenges in the writing assessment process. Critical thinking and the meaningful learning assessment process improve the learners' self-regulation, achievement, and considerable writing assessment decisions. Second, the two aspects of metacognitive knowledge and regulation are teachable, experienced, and encouraged, and third, they can be beneficial strategies in writing assessment and gaining cognitive purposes.

EFL teachers, learners, materials developers, and syllabus designers may be the most beneficiaries of the current study. They can gain insights into how far raising metacognitive awareness should improve the English writing assessment. The findings would help EFL learners find out about their learning, improve learning strategies, and benefit from them in new situations. Meanwhile, this research can help EFL teachers create learning situations to provide proper instruction, practice, and constructive feedback to train independent, self-regulated learners. Moreover, this research can be substantial to material developers and syllabus designers and stimulate them to prepare materials that focus on metacognitive strategy training. The study can also draw their attention to design activities, which help EFL learners become self-directed, self-regulated, self-evaluative.

The present study revealed the benefits of raising metacognition in enhancing writing assessment ability. Meanwhile, improving critical thinking (analysis, synthesis, and evaluation) and self-regulation are other values of the current study. Students' ability to rely on themselves rather than the teacher due to practicing planning, monitoring, revising, the metacognitive regulation process is the focal point. In fact, before the COVID-19 outbreak, learners learned the materials through teachers' instructions in face-to-face courses. However, most educational systems can easily shift from face-to-face to modular or online learning via practicing metacognitive strategies since different learning outcomes such as directed and selective attention, self-management, self-monitoring, self-evaluation, and cooperation are empowered.

However, investigating the effects of metacognitive knowledge and regulations on assessing other skills can be the subject of further studies. Performing interviews with learners and teachers can help future researchers delve into their minds and explore their mental processes while implementing metacognitive strategies. This study neglected individual differences such as age, motivation, and social background in interpreting the results due to the COVID-19 Pandemic, which is an appealing issue for further studies.

Eventually, it is also noteworthy that one of the most critical limitations of this research was the outbreak of the Covid-19 Pandemic; therefore, the researchers had to use online instead of in-person classes. This study focused only on the quantitative aspects of evaluating EFL learners' awareness and reactions using metacognitive knowledge and strategies. A qualitative study could delve into the participants' minds and be more illuminating.

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