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Assessment and language improvement: the effect of peer assessment (PA) on reading comprehension, reading motivation, and vocabulary learning among EFL learners

Mahyudin Ritonga¹, Khalil Tazik^{2*} , Abdulfattah Omar³  and Elham Saberi Dehkordi⁴

*Correspondence:
khaliltazik@gmail.com

¹ Muhammadiyah University of West Sumatra, West Sumatra, Indonesia

² Department of General Courses, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

³ Department of English, College of Science & Humanities, Prince Sattam Bin Abdulaziz University, Alkharj 11942, Saudi Arabia

⁴ Department of English, Najafabad Branch, Islamic Azad University, Najafabad, Isfahan, Iran

Abstract

Assessment is an inseparable part of teaching and learning, and it helps teachers and students to modify their teaching and learning processes. One type of assessment is peer assessment (PA), and its effects were examined on developing Iranian EFL learners' reading comprehension (RC), reading motivation (RM) and vocabulary learning (VL) in this research. To achieve this goal, 60 Iranian EFL students at the intermediate level and with the age range of 18 to 26 years were selected based on a convenience sampling method and divided into two groups: the control group (CG) and experimental group (EG). After that, the groups took the pre-tests of RC, RM, and VL. The EG then was divided into six sub-groups of five, and PA was applied to evaluate their reading and vocabulary performances. The learners in the EG checked their classmates' performances in peers with the teacher's help. In the CG class, the participants themselves assessed their own performances after each test with the help of the teacher. After a 15-session treatment, the post-tests of vocabulary, RM, and RC were carried out on both groups. The outcomes of the one-way ANCOVA tests demonstrated that the EG outflanked the CG on the three post-tests of RC, RM, and VL. In fact, the results indicated that using PA generated positive effects on Iranian EFL learners' RC, RM, and VL. It can be claimed that the PA is a practical technique to improve EFL learners' language learning. The implications of this research can reduce students' dependency on teachers and increase their independence in the evaluation process.

Keywords: Assessment, PA, RC, RM, Vocabulary learning

Introduction

In education, assessment is an unavoidable element since it can affect learning and teaching, and when conducted in an authentic way, it can provide constructive feedback and revisions to enhance the teaching/learning process (LP). Moreover, through the effective involvement of learners in the LP, assessments can be encouraging and motivating (Alderson & Banerjee, 2001). Assessments may additionally develop instructions through aiding the instructors to diagnose their learners' strengths and weaknesses (Baniabdelrahman, 2010). It is also asserted that assessment is considered

an ethical, effective, and fair instrument to assess different attributes of the students (Mousavi, 2012).

One common type of assessment is PA which improves learners' creativity skills and critical thinking. While learners measure and assess each other's writing performances, they also develop their own learning (Chong et al., 2012). Generally, PA can be referred to as evaluating the work conducted by the pupils within the framework of specific criteria by their classmates (Tunagür, 2021). PA can be interpreted as a series of actions by which students can assess and judge their peers' learning activities and accomplishments (Liu & Brantmeier, 2019). PAs have some strong points mentioned by researchers including engaging students, motivating learners, increasing students' participation, and putting learning responsibility on the students' shoulders (Sluijsmans, 1999). By using PAs, learners are able to show several different behaviors including conducting the act of writing more carefully, getting more self-confident and dynamic in the process of learning and assessing, and reflecting on what they have performed (Yurdabakan, 2012). PA can enhance social skills, sense of ownership, self-confidence responsibility, negotiations, and group work among students. It can also convert passive learning into active learning in a way that increases interest among the students (Esfandiari & Tavassoli, 2019).

Saito (2008) holds that using PAs can encourage reflective learning by seeing the performances of other students and getting cognizant of the criteria of the performance. Generally, PA appears to create constructive reactions in the students; though some learners have worries and concerns, it results in the improvement of self-awareness, perceiving the gaps among one's and others' perceptions, and simplifying learning and responsibility for it. Additionally, concentrating on classmates' weaknesses and strengths can improve the learners' achievements, increase their levels of critical thinking, and raise their autonomy and independence (Baker, 2016). Based on Zhi-Feng and Yi Lee (2013), the learners created useful adjustments to their work by receiving feedback from others after engaging in PA-based learning.

PAs are viewed as an effective method for developing RC. Reading is considered as an activity to comprehend strings of vocabulary in a reading text (Desta, 2020). It is the most imperative skill necessary to be mastered by the learners, particularly foreign language learners who aim to develop their knowledge and language learning (Ghahderijani et al., 2021; Pangestika, 2018). RC is an essential cognitive capacity for children that supports school achievements and consecutively involvement in most areas of adult life (Hulme & Snowling, 2011; Rezai et al., 2022). RC is a vital cognitive capability that includes linguistic skill (e.g., grammar, pronunciation, and vocabulary), cognitive skill (e.g., working memory, De Beni & Palladino, 2000), and metacognitive skill (both for the elements of control and knowledge), and more particularly, talents that fall under a higher degree of comprehension, such as the ability to draw conclusions (Channa et al., 2015).

Vocabulary is a reliable indicator of RC during language improvement (Elleman & Oslund, 2019). Learners who do not have adequate vocabulary knowledge face challenges and problems throughout their language learning career, which results in learning demotivation and constant failures (Khany & Khosravian, 2014). Besides, the vocabulary knowledge of the students is considered as a tool for opening or restricting information

access and regularly shows if a student is capable or not (Beck & McKeown, 2007). Being assisted and scaffolded, students can enhance their vocabulary knowledge (Kayi-Aydar, 2018; Vadivel et al., 2021). In the other words, what students need during the VL process is to be guided and directed by their instructors to monitor study time to improve learning both inside and outside of the classrooms (Rogers, 2018). For this objective, teachers can use PA in their teaching process to facilitate VL for the students.

Motivation is another variable that impulses students to develop their RC (Astuti, 2013). It has a central role in learning a language successfully (Hussain et al., 2020; Vadivel et al., 2019). Concerning RM, it is regarded as a pivotal factor in reading engagement that influences the outcomes of reading achievements and school accomplishments (Guthrie et al., 2006). It is relevant to willingness, propensity, mental readiness, attitudes, and perceptions to involve in the reading activities (Alhamdu, 2015). RM can affect learners' interests, efficiency, and aims since these factors can develop comprehension results (Nuttall, 2016). Raising motivation may boost the outcomes of comprehension. Learners cannot gain better comprehension if they do not have the needed motivation. Having inadequate RM causes the pupils' reading failures. Consequently, RM is highly significant in attaining RC (Saeheng, 2017). To develop the RM, RC, and VL of EFL students, this study aimed at using the PA as a facilitative and accelerative agent. In fact, three objectives were followed in this study; first, this research intended to examine the effects of PA on RM among Iranian EFL learners. Second, the effects of PA on Iranian EFL learners' RC were explored, and third, this study aimed at investigating the impacts of using PA on Iranian EFL learners' VL.

This study can be significant since it can highlight the importance of PA and cooperative learning activities. Also, the findings of this study can bring about useful implications for teachers and learners to take PA into consideration. In addition, the significance of this study is that it works on new variables that were not examined in the previous investigations.

Review of the literature

Theoretical background

Different issues are involved in developing RC of EFL learners, one of which is using a proper assessment. Irrespective of the instructional methodologies applied, assessment has a chief part in the learning and teaching process and supplies constructive feedback to the learners (Alias et al., 2015). Indeed, assessment can be utilized as a beneficial method to advance learning various parts of a foreign/second language (Ashraf & Mahdinezhad, 2015; Lee & Hannafin, 2016) due to its concentration on applying real settings, diagnosing the weaknesses and strengths of the students, inspiring human judgment, and utilizing open disclosures of standards and rating norms (Brown & Abeywickrama, 2010; Brown & Hudson, 1998). As stated by Cheng and Warren (2005), being engaged in methodologies, processes, and results of the assessments is useful for both students and teachers. One method to increase the students' engagement in the act of the assessment is utilizing the PA.

PAs that promote student-centered assessments have gained substantial attention for more than 40 years (Chang & Lin, 2019; Hoffman, 2019; Topping, 2018). Based on this type of assessment, the learners judge their classmates' performances quantitatively, for

instance, via providing a peer with grades or scores, and/or qualitatively, for instance, via supplying a peer with oral or written feedback (Topping, 2017). PAs bring about important educational values since they enable students to participate in the assessments by assessing their peers' performances (Bryan & Clegg, 2019). PA can foster learner-centered evaluation and learning (Panadero, 2016; Thomas & Palmer, 2018).

Based on the literature, PAs support the LP by supplying an immediate check of students' performances against the criteria, followed by feedback on weaknesses, positive points, and guidance and direction for enhancement (Panadero, 2016; Topping, 2017). There exist some educational advantages for peer assessors because they are subjected to other opinions and writing samples and can internalize the standards and criteria of the assessments (Smyth & Carless, 2020). Yet, not all kinds of peer feedback can result in performance development.

Scholars explain some conditions under which using peer feedback may produce positive effects on LP (Schunemann et al., 2017). Engaging students in the procedures of the assessment is broadly accredited as a useful technique for developing self-regulation because it permits students to find mistakes and create some strategies to solve them (Zamora et al., 2018). However, the progress of PA skills is problematic since it needs constant and excessive practice for students to get skilled peer assessors (Andrade, 2016). Involvement in the PA assumes that instructors can stimulate students and engage them in judiciously planned tasks (Race, 2019). Consequently, engagement in the PAs eventually aims at having a positive effect on students' cognitive improvement and learning motivation (Adachi et al., 2018).

PAs can improve engagement, responsibility, social skills, self-confidence, sense of ownership, group work, and negotiation among students. PA can also modify passive learning to active learning in a way that rises interest among the learners (Meletiadou & Tsagari, 2016). PA develops students' understanding in terms of writing, permits for more self-corrections, checking books, and asking instructors for clarifications as learners are encouraged to assume responsibility for their own assignments (Fan & Xu, 2020). In addition, Chien et al. (2020) stated that using PA yields different benefits concerning students' writing performances.

Topping et al. (2000) argued that the social and communicative skills of the students such as oral communication skills, negotiation skills, justifying individuals' positions, giving and accepting criticisms, and assessing recommendations objectively are increased by PA. It is stated that PAs enable learners to enhance their capabilities and skills to evaluate the work of other learners. In other words, students can monitor, analyze, and assess different issues of their peers' learning performance (Meihami & Esfandiari, 2020). PAs can be used as a uniting factor that increases cooperation and mutual understanding among students (Chang et al., 2012; Liu et al., 2021). Nevertheless, the execution of the PAs is time-consuming as it requires allotting time to teach the students how to judge their peers. Also, the students may not acknowledge their errors (Hung, 2018), or they may have the opportunity to cheat where they know the peers who are going to measure their products by requesting them to give the same scores as they will (Brown & Abeywickrama, 2010).

The theory behind our research is the social interdependence theory that has been successfully used in education. Basically, social interdependence theory is nothing more

than a prediction of how students will interact when in groups with diverse objectives and interdependencies. Causing them to either behave competitively or cooperatively with all the corresponding behavioral patterns (Jongman, 2014). The social interdependence theory is built on the postulation that group work and interactions within a group affect learning outcomes (Deutsch, 2015; Johnson & Johnson, 2005). This theory postulates that cooperative attempts are based on intrinsic motivation produced by interpersonal factors in working together and joint aspirations to reach an important significant goal.

Experimental background

The impacts of PAs on language learning were examined by some researchers. Shams and Tavakoli (2014) examined the impacts of peer, traditional, and self-assessments (SA) on developing EFL students' reading skills. To achieve this goal, seventy-seven homogeneous Iranian learners from a private institution were chosen among 102 students. They were assigned to three experimental groups and afterward subjected to the research intervention. The three groups were trained in RC differently by traditional, self, and PAs. After that, the reading skill post-test was performed to figure out respondents' RC abilities after the instruction. The results of the statistics indicated that the PA participants significantly outdid their counterparts in the reading post-test. The findings also demonstrated that there were no significant distinctions in the performances of the other two groups in the RC post-tests. The results of this investigation showed that using PA can be beneficial in language learning in general and foreign language reading skills in particular.

In another study, Ashraf and Mahdinezhad (2015) tried to investigate the impacts of self- and PA on the developing speaking skills and autonomy of EFL students. Their results depicted that using the peer assessment produced more important impacts on developing EFL students speaking abilities and autonomy than the SA. In another research, Liu and Brantmeier (2019) investigated the effects of SAs on the writing and reading skills of young Chinese EFL learners. Their outcomes revealed that using self-assessing developed the Chinese EFL learners' writing and reading skills.

In the Indonesian context, Khairani (2019) analyzed the use of the PAs in reading skills via task-based learning among grade 10th learners in Indonesia. This research utilized a qualitative research method via four steps: (1) data gathering, (2) data reduction, (3) data presentation, and (4) conclusion and verification. The data of this study were PA utilized by the teachers and the source of data in this study were three English instructors in grade tenth students. The strategies of gathering the data were via performing documentation, interviews, and observations. The results of the research demonstrated that two instructors used PAs well, and one instructor did not use PAs. The findings indicated that the application of PAs in RC via task-based learning was effective. In another research, Seifert and Feliks (2019) examined the effects of self-assessment and PA to ensure students would take more responsibility for their learning, and their results revealed that the participants greatly benefited from these two assessments to develop their assessment skills and learning processes.

Yet, in another study, Esfandiari and Tavassoli (2019) intended to investigate the influences of implementing PA vs. SA on young EFL students' performances in productive

and selective reading activities. To carry out this study, 56 participants among 70 learners in four intact classrooms were chosen according to their performances on the A1 Movers Exam. Later, the respondents were randomly assigned to two groups, peer assessment, and SA. The reading part of the second A1 Movers Exam was applied as the pre-test and post-test of the study. In the SA group, the participants evaluated their own performances after the reading tasks while in the peer-assessment group, the students examined their peers' performances in pairs. The collected information received analyses via using MANOVA and ANOVA tests. The outcomes demonstrated that the peer assessment and the SA were useful in developing EFL students' performances in both productive and selective reading activities. Additionally, no remarkable distinction was found between the effectiveness of peer and SAs groups on productive and selective reading activities.

Double et al. (2020) did a meta-analysis that assessed the impacts of PAs on academic performances in primary, secondary, or tertiary students across domains and subjects. A low to medium impact of PAs on academic performances was discovered. The outcomes suggested that using PAs developed academic performances in comparison with no assessments and teachers' assessments, but were no meaningful differences in its impacts from SAs. In addition, meta-regressions investigated the moderating influences of several feedbacks and instructional features (e.g., offline vs online, frequencies, education levels). The findings recommended that the use of PAs was noticeably significant across a wide range of settings.

Similarly, Li et al. (2021) concentrated on non-cognitive skills by conducting a meta-analysis to examine the effects of using the PAs on the learners' non-cognitive learning results. After a careful search, the researchers included 43 effect sizes from 19 types of research, which generally involved learning techniques and academic mindsets as non-cognitive outcomes. Applying a random effects model, they discovered that those learners who had used the PA demonstrated a 0.289 SD unit development in non-cognitive outcomes as compared to those who did not use the PAs. Additionally, this research discovered that the effects of the PAs on non-cognitive results were highly greater when both comments and scores were supplied to the learners or when the assesses and assessors were matched at random.

Recently, Malek Gerdeh and Davaribina (2021) discovered the impacts of utilizing the PAs on the development of Iranian EFL students' oral performance. The respondents were randomly divided into four groups (EG and CG) based on their gender. They were at the pre-intermediate level and there were twenty participants in each group. The EG participants received the instruction in the form of PA questionnaires whereas the CG participants received conventional treatment. The Cambridge Oral test and the Oxford placement test were utilized as pre-post-test. A true-EG design was used in this research. One-way and two-way ANOVA tests were run to assess the effects of the treatment on the participants' performances. The results indicated that there were statistically substantial differences among the CG and EGs, but there were not statistically remarkable differences between the female and male participants in terms of their oral performances.

Aghajanzadeh Kiasi and Rezaie (2021) inspected the impacts of PA and collaborative assessment (CA) on the writing ability of Iranian intermediate EFL learners. To

conduct this research, 36 Iranian EFL learners were homogenized and divided into one control and two experimental groups comprising 12 students. The experimental classes received instruction on English writing via using CA and PA strategies. On the other hand, the control class was instructed by the traditional assessment. The findings of the descriptive and inferential analysis indicated statistically remarkable differences among CA, PA, and TA strategies. The outcomes also depicted that the CA and PA participants outdid the control participants. However, the CA participants outflanked significantly the PA participants.

In Turkey, a quantitative research design was done by Tunagür (2021) who investigated if using the PAs produces positive effects on writing motivation and writing anxiety of 6th-grade pupils. There were 35 students in this research, 17 were in the EG, and 18 were in the CG group. The data of the research were gathered by using a writing anxiety questionnaire and a writing motivation questionnaire. During 40 days, the PA was used and the texts written by the participants were assessed by their classmates with the PA forms. For analyzing the gathered data, first, the *t* tests were used for unrelated groups, and two-way ANOVA tests were applied for complex measures. Based on the results gained in the study, it was proved that the EG's writing anxiety was reduced highly in comparison to the CG. In addition, the findings divulged that the EG's writing motivation increased after the treatment. Based on the gained outcomes, one can claim that using PAs can decrease the learners' writing anxiety and develop their writing motivation.

Meletiadou (2021) explored the impacts of PA on 200 Greek Cypriot EFL learners' writing skills. The adolescent students who attended two writing classes were selected as the participants of the study. The participants were required to apply a PA rubric which was also developed by the researcher but negotiated between the learners and their instructors during the training sessions. The research results showed that PA generated moderately positive effects on the learners' writing ability.

The studies reviewed above confirmed the positive effects of PA on language learning. Most of these studies were conducted on the effectiveness of PA on writing skills, and they did not pay much attention to RC, RM, and VL. In other words, it can be concluded from the above-stated studies that there is a scarcity of literature on the impacts of PA on developing RC, RM, and VL of Iranian EFL learners. By accomplishing this research, we aimed at filling the gap and answer the questions below:

- RQ1. Does using PA bear a significant impact on Iranian EFL learners' RC?
- RQ2. Does using PA bear a significant impact on Iranian EFL learners' RM?
- RQ3. Does using PA bear a significant impact on Iranian EFL learners' VL?

Based on the research questions, three null hypotheses were recommended:

- HO1. Using PA does not bear a significant impact on Iranian EFL learners' RC.
- HO2. Using PA does not bear a significant impact on Iranian EFL learners' RM.
- HO3. Using PA does not bear a significant impact on Iranian EFL learners' VL.

Methodology

Design of the study

Since we could not select the participants randomly, a quasi-experimental design was employed in this research. There were two groups of control and experimental in this study. One independent variable (e.g., PA) and three dependent variables (RM, VL, and RC) were used in this study.

Participants

The participants of the research included 60 Iranian EFL learners who were at the intermediate level based on the manager of their institute. Before we started the study, the manager of the institute had determined the general English proficiency of his students. The participants were all males aged between 18 and 26 years, and they have studied English at the Parisian English Institution located in Ahvaz, Iran. We selected the respondents using a convenience sampling method and divided them randomly into two groups of CG ($n=30$) and EG ($n=30$).

Instruments

We used a vocabulary test to assess the participants' vocabulary knowledge at the beginning of the research. A teacher-created vocabulary test that included 20 multiple-choice items was prepared based on the Vocabulary for High School Book and given as the pre-test of the research. Three validators verified the face and content validity of the pre-test. The results of KR-21 showed that the reliability index of the vocabulary test turned out to be .79. After the treatment, the students in the two groups took the same test as the vocabulary post-test.

TOEFL RC Subtest as a standardized reading skill test was utilized as the reading pre- and post-tests of the research. The students were required to read five texts that express general academic subjects and respond to 10 multiple-choice questions for each text. The reliability index of this test was .86 for the sample of this research. The appropriateness of this measure was substantiated by three English instructors.

A motivation questionnaire was applied in collecting the participants' RM information. We used the questionnaire of Indrayadi (2021) that he adapted from Wang and Guthrie's (2004) Motivation of Reading Questionnaire. The questionnaire consisted of 53 items that were applied to assess the RM of the respondents. It had a 5-point Likert scale, including strongly disagree to strongly agree. Three validators confirmed the validity and appropriateness of the questionnaire. The reliability of this instrument was .82 based on the Cronbach Alpha formula. This questionnaire was used at the outset and the end of the study.

Collecting and analyzing the data

Two intermediate EFL classes each including 30 students were selected to do this study. One class was regarded as the EG and the other class was considered as the CG. Then, both classes took the vocabulary test, RM test, and RC test to be pretested at the outset of the research. After that, both groups received the instruction and, in each session, one new reading text with new vocabulary was trained to them. The

Table 1 EG and CG (VL post-tests)

Groups	Means	Std. deviations	N
CG	14.90	2.39	30
EG	17.50	1.69	30
Total	16.20	2.44	60

Table 2 One-way ANCOVA (EG and CG VL post-tests)

Source	Type III sum of squares	df	Mean Square	F	Sig.
Corrected model	117.40	2	58.70	14.28	.00
Intercept	242.97	1	242.97	59.13	.000
Pre	16.00	1	16.00	3.89	.05
Groups	85.94	1	85.94	20.91	.00
Error	234.20	57	4.10		
Total	16098.00	60			
Corrected total	351.60	59			

pre-reading, while-reading, and post-reading activities were utilized to teach the reading texts. Also, the synonyms and explanations of the new words were provided for both groups. The teaching method for both groups was similar but the way of assessing was different. The EG was divided into six sub-groups of five, and PA was employed to evaluate their vocabulary and reading performances. At the beginning of each session, one test including ten vocabulary items and ten RC items was given to both groups. The students in the EG class checked their classmates’ performances in peers with the guidance of the teachers. In the CG, the students evaluated their own performances after each test with the help of the teacher and spoke about their weaknesses and strengths. After 15 sessions of treatment, the post-tests of vocabulary, RM, and RC were administered to both groups and their post-tests and pre-tests scores were analyzed.

After assessing and rating the performances of the participants on the pre-test and post-test, the gathered data were analyzed by applying the SPSS software, version 23. One-way ANCOVA tests were run for comparing the post-tests of the EG and the CG. The gained results were presented in the next section.

Results and discussion

Having collected the needed data through the mentioned procedures, the researchers analyzed them to gain the ultimate results. First, they got sure about the normality distribution of the data through using the Kolmogorov-Smirnov test and then they presented the results of the one-way ANOVA tests in the following tables:

Table 1 depicts that the CG’s mean score is 14.90 and the EG’s mean score is 17.50. It indicates that the EG class obtained greater results than the CG class on the vocabulary post-test. A one-way ANCOVA test was applied in the table below to observe if the differences between the vocabulary post-tests of both groups were significant or not.

According to the findings depicted in Table 2, *Sig* is .00 which is smaller than 0.05; therefore, the differences between the vocabulary post-tests of both groups were remarkable. In fact, the EG participants had better performance than the CG participants on the vocabulary posttest. The PA technique helped the EG participants to expand their vocabulary knowledge.

The results of the RC post-tests are summarized in Table 3, together with the groups' respective means and standard deviations. The means the CG and the EG are 15.36 and 18.38, respectively. On the RC post-tests, it seems that the participants in the EG group performed better than the participants in the CG group. A one-way ANCOVA test shows if the differences between the RC post-tests of both groups were significant or not (see Table 4).

Table 4 reveals that *Sig* (.00) is smaller than 0.05, implying that the differences between both groups are noticeable in the reading post-tests. In fact, the EG participants outdid the CG participants on the RC post-test. Using the PA was a useful technique that assisted EFL students to enhance their RC.

Given that the EG participants' mean score on the RM post-test was 190.60 and the CG participants' mean score was 143.93, as shown in Table 5, it would seem that the EG participants performed better than the CG participants. To understand if the differences between the RM post-tests of both groups were significant, a one-way ANCOVA test was run in the below table:

As clearly displayed in the above table, *Sig* is .00 which is less than 0.05; thus, the differences between the RM post-tests of both CG and EGs were significant. Indeed, the EG

Table 3 EG and CG (RC post-tests)

Groups	Mean	Std. deviation	N
CG	15.36	2.53	30
EG	18.38	2.77	30
Total	16.87	3.03	60

Table 4 One-way ANCOVA (EG and CG RC post-tests)

Source	Type III sum of squares	df	Mean squares	F	Sig.
Corrected model	137.33	2	68.66	9.60	.00
Intercept	334.61	1	334.61	46.79	.00
Pre	2.33	1	2.33	.32	.57
Groups	137.26	1	137.26	19.19	.00
Error	407.60	57	7.15		
Total	17614.00	60			
Corrected total	544.93	59			

Table 5 EG and CG (RM post-tests)

Groups	Mean	Std. deviation	N
CG	143.93	39.55	30
EG	190.60	34.57	30
Total	167.26	43.70	60

students outflanked the CG students on the post-test of RM. The better performance of the EG on the RM post-test can be ascribed to the positive effects of the PA technique.

Briefly, the results indicate that the EG outdid the CG on the three post-tests of RC, RM, and VL. The results show that the treatment (PA) generated positive effects on developing EFL learners' RC, RM, and VL.

Respecting the impacts of PA on enhancing Iranian EFL students' RM, RC, and VL, the outcomes of the current research indicated that using the PA generated positive effects on the mentioned dependent variables. In fact, there existed significant differences between the performances of the EG and CG on their post-tests. The PA could assist Iranian EFL students to enhance their VL, RM, and RC significantly. The improvement of VL, RC, and RM is depicted in Tables 2, 4, and 6, respectively. Consequently, the null hypothesis of the research "Using PA does not enhance Iranian EFL learners' RM, RC, and VL" was rejected.

Our research findings are endorsed by the findings gained by Double et al. (2020) who verified the constructive impacts of using PAs on language learning in different contexts. Also, the outcomes of the present research are in agreement with other researchers such as Shahrakipour (2014), Ashraf and Mahdinezhad (2015), Gielen et al. (2010), and Liu and Brantmeier (2019) who concluded that PA was an effective technique to develop EFL learners' language learning proficiency. Furthermore, our findings are in accordance with the findings of Khairani (2019) who confirmed the positive implementation of the PA in developing Nigerian EFL students' reading proficiency. Other similar results were gained by Meletiadou (2021) who discovered that PA produced positive impacts on the writing ability of the students.

Additionally, our outcomes are in congruent with the outcomes of Esfandiari and Tavassoli (2019) who inspected the effects of using PAs on developing EFL students' productive and selective reading activities. They indicated that employing the PAs improved their participants' performances in productive and selective reading activities. Besides, our study results are advocated by Malek Gerdeh and Davaribina (2021) who examined the influences of applying the PAs on developing Iranian EFL learners' oral skills. Their results demonstrated that the PAs group outstandingly conducted better than the CG on the oral skill post-test.

Likewise, the current research findings are in accordance with Tunagür (2021) who discovered that using the PA technique produced positive effects on reducing writing anxiety and increasing the writing motivation of EFL students. Similarly, our survey

Table 6 One-way ANCOVA (EG and CG RM post-tests)

Source	Type III sum of squares	df	Mean squares	F	Sig.
Corrected model	88,606.28	2	44,303.14	104.80	.00
Intercept	13,038.74	1	13,038.74	30.84	.00
Pre	55,939.61	1	55,939.61	132.33	.00
Groups	31,901.92	1	31,901.92	75.46	.00
Error	24,095.45	57	422.72		
Total	1,791,390.00	60			
Corrected total	112,701.73	59			

findings are supported by Li et al. (2021) who discovered the effectiveness of PA on the non-cognitive skills of the students. Moreover, the current research is confirmed by Lee (2015) who suggested that PA can eventually result in more language enhancement since learners are probably more eager to take part in the assessment and learn more simply from their friends because they comprehend peer feedback better than teachers' feedback. Our findings verified the findings of Zarei and Sayar Mahdavi (2014) who stated that using PAs developed EFL students' grammar and vocabulary knowledge.

Our study findings are congruent with the one performed by Fathi and Khodabakhsh (2020) who discovered that PA activities could help decrease the participants' writing anxiety. Similarly, Fathi et al. (2019) examined the effects of PA activities on Iranian EFL students' L2 writing self-regulation. They indicated that PA activities made students focus more on the demands of written activities and found out how to improve their writing competencies and all of their linguistic resources to take more charge of their writing performances.

One explanation for the better performances of the PA group in comparison to the CG can be due to the cooperation that the PA created among the students. Using PA among students can lead to cooperative learning in which the students are enthusiastic to aid and evaluate their classmates and get responsible for their own language learning accomplishments which can result in better social skills, better evaluation, and more effective assessments. Therefore, our results are supported by the social interdependence theory holding that the learners assist each other to learn better because they care about the group and its members, and they want to reach the same single aim (Slavin, 2011). Based on the social interdependence theory, the students' cooperation can help them reach shared objectives. In addition, our findings lend support to the social constructivism theory proposed by Vygotsky and state that cooperative activities conducted by the students promote their learning since the students of the same age work in one another's zone of proximal development (ZPD) and model behaviors, which is more useful than children working individually (Webb, 2008).

When learners are given the opportunity to be the assessors, they get highly motivated and encouraged to seek deep knowledge and build up a better understanding. PA helps students to improve their judgment skills, critiquing capabilities, and self-awareness. They learn to be more responsible while striving to figure out their points of strengths and weaknesses. PA lifts the status and role of the learners from passive learners to active ones. These features of PA can be the other reasons for the gained results in the current study.

The other reason for the gained results in the existing study can be attributed to receiving more input and feedback. The EG participants were exposed to more input and feedback that helped them develop their vocabulary and reading skills and motivation. In addition, PA provided the students with a more active role in language learning. By using PA, students could enhance more awareness of classroom discussion as they were expected to assess both their own performances and their peers' performances. Consequently, they became more engaged in the assessment process and focused on it as a technique for learning and language improvement.

PA has other advantages that may be the reasons for the present research results. These advantages are as follows: Pushing learners to take responsibility and become

involved in the process of learning, using group work that develops the group members' work and skills, focusing on enhancing students' judging skills, providing new sort of feedback where is it considered fair by many students due to their trust of other colleagues, and pushing the evaluated students to take their work seriously as it is going to be evaluated by their peers.

Conclusions and implications

Briefly speaking, the findings of the current research showed that the participants who applied PA gained better results than the CG participants. The PA developed the vocabulary knowledge, RC, and RM of the EFL students. Accordingly, as PA seems to produce positive advantages and benefits to EFL students in terms of their language learning, it can be worthwhile to be implemented in EFL contexts. Consequently, English instructors are offered to use PA in their teaching process. PA is a significant part of the move towards more forms of participatory learning. There is a need to use it in our universities and schools as it is more adaptable to modern developments in the assessment of learning consequences. Teachers are required to shed light on PA as a technique to assess learners and on the need for more applications and experimental research in the future.

Based on the results, it can be concluded that involving learners in the assessment procedure is effective for the students as it allows them to identify their mistakes and improve strategies to address them. Also, it can be concluded that using learner-centered approaches and methods is more effective for teachers and students. Providing enough support and feedback for the students can assist them to develop their language learning; therefore, teachers are suggested to involve the students in the learning process, encourage cooperative learning among them, and provide sufficient support for them. Besides, using PA can lead to a cooperative situation in which the students are eager to aid and assess their peers and take responsibility for their own achievements which can result in a more in-depth study, better evaluation, better social skills, and more effective assessment (Ross, 1998).

Our research has some implications for EFL teachers and learners due to the positive influences of the PAs on developing language learning, especially on vocabulary knowledge, RM, and RC. The results of this research can help students learn more from their peers and classmates than they learn from their own judgment. Using PA can encourage the pupils to believe that they are a part of a community of scholarship since in this type of measurement, the learners are invited to take part in a crucial aspect of higher education and they also make serious judgments on others' work. The findings of this investigation can also be utilized for circumstances in which learners have difficulties because of affective variables. For example, due to stress, students cannot talk with their instructors simply; subsequently, they can reduce their weaknesses by receiving assistance from their classmates. The results of our survey can also improve learners' independence, autonomy, reflection, and self-regulation by supplying insights on the advantages of PAs, cooperative learning, and peer learning. Moreover, the results of this research can develop social skills such as cooperative learning among EFL students. PA can involve learners in the process of learning and develop their abilities to think critically; involving students in assessing their performances and their peers can

increase evaluation experience and benefit from feedback. The implications of this study can decrease students' dependency on teachers and increase their independence in the evaluation process.

Our results can bring about some implications for EFL teachers. Indeed, the outcomes of this investigation can be valuable and beneficial for instructors to make the atmosphere of the classes more friendly by using cooperative activities. The findings of this research can help teachers have more dynamic classes by involving their students in the assessment process. A significant role for PA is supplying supplementary feedback from classmates while permitting instructors to evaluate the individual students less, but better. Teachers can train their learners in a way that they can have PAs on their classmates' performance and obtain language skills successfully. In addition, the results of the present research can be helpful for teachers as applying PA decreases the teachers' responsibility and makes students more responsible for their own learning and assessment. Teachers can use PA as an alternative to traditional assessments in the evaluation of the learning process, which can help in the measurement of learners' achievements from their peers' viewpoints. This research can also be of great advantage to syllabus makers and curriculum designers as PA-based activities are appropriate techniques that can be used in coursebooks. If more PA-based and cooperative-based activities are provided for the students to measure their own and their friends' achievements, they will get more responsible for their own learning and better learning will happen.

Limitations of the study

Finally, based on the limitations of the research, some recommendations were offered hoping to help other researchers to conduct more similar investigations. This research was restricted to one type of alternative assessment (PA); it is required to apply other kinds of assessment to scrutinize their influences on the students' performance in various skills and sub-skills. Due to the small sample of the present research, the next studies are recommended to work on more respondents to develop their findings' generalizability. Besides, qualitative studies on applying diverse assessment kinds and their effects on learners and instructors can be carried out by conducting interviews and observations of what occurs in class settings. In addition, next researchers are suggested to examine the effects of PA on different age ranges to see if the PA is suitable for both adult and young EFL learners. As the current research was conducted in an EFL context, similar topics can be carried out in different ESL contexts. Other similar studies can be conducted on female students since this research could work only on male students.

Abbreviations

PA	Peer assessment
EFL	English as a Foreign Language
RC	Reading comprehension
RM	Reading motivation
VL	Vocabulary learning
CG	Control group
EG	Experimental group
LP	Learning process
SA	Self-assessments
TOEFL	Test of English as a Foreign Language
ANCOVA	Analysis of covariance

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Authors' contributions

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Authors' information

Mahyudin Ritonga is a lecturer at Muhammadiyah University of West Sumatra, Indonesia. He published some papers in different journals.

Khalil Tazik, the second and the corresponding author of this paper, is an assistant professor in the Department of English, School of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran. He has published in ISI and some national and international journals. His main interests are Discourse Analysis, Psycholinguistics, Sociolinguistics, and Language Measurement.

Abdulfattah Omar is an assistant professor in the Department of English, College of Science & Humanities, Prince Sattam Bin Abdulaziz University, Alkharj, Saudi Arabia.

Elham Saberi Dehkordi is a lecturer in the Department of English, Islamic Azad University of Najafabad, Isfahan, Iran.

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The data analyzed in this study is subject to the following licenses/restrictions: the dataset will be available upon request by contacting the corresponding author. Requests to access these datasets should be directed to khaliltazik@gmail.com.

Declarations**Competing interests**

The authors declare that they have no competing interests.

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