

Original article

Scaffolding Constructivism and Reciprocal Instruction (CAR): A Multi-instruction to Improve Elementary Students' Comprehension Skills

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Abstract

In this study, we examine the effect of two Constructionist model And Reciprocal instructions (CAR) to typical fourth grade language arts instructional practices. 12 weeks, cluster randomized study was conducted to estimate effect of CAR instructions. fourthly students in two groups assigned by school to those instruction spontaneously. The research design was employed using two Interact classes: control (n=20) and experimental (n=20). The control class taught by traditional instruction whereas CAR class receives comprehension principles equivalent 90 mins per weeks in instructor guided small group students who participated CAR instruction in small groups outperformed students in traditional instruction groups on standardized reading comprehension tests.

Keywords: Reading Comprehension Instruction, Multi Comprehension Instruction, Constructivism and Reciprocal Instruction.

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INTRODUCTION

Reading comprehension is process of engaging text for the purpose of extracting and constructing meaning (Snow, 2002). A substantial body of research has documented the significance comprehension instruction to improve elementary school's comprehension. It sets the idea that the goal of reading is to understand information on texts, which involves interactive process between the reader, the text, and the context. Text comprehension is a complex task that involves many different cognitive skills and processes. Consequently, there are many different aspects of the reading process where difficulties may arise and which, in turn, affect text comprehension, e.g., word-level, sentence-level and discourse in addition, cognitive abilities such as memory skills and general intelligence, and factors such as amount of affect comprehension. Cain, Kate, and Jane Oakhill. "Reading comprehension difficulties"(Cain & Oakhill, 2004). Comprehension understanding includes literal level, inferential level, critical level and creative level. Good readers engage deeply with those processes, monitor and evaluate what they read, and take advantage from what they read. Therefore, teaching students to become good readers is a difficult and challenging task that requires specific comprehension instructions (Parlindungan & Prasetya, 2022). According to previous study, there are seven text comprehension instructions that have scientific evidences in improving reading comprehension (Panel et al., 2000). Those strategies are: (1) comprehension monitoring, (2) cooperative learning, (3) graphic and semantic organizers, (4) question answering, (5) question generation, (6) summarization, and (7) multiple strategies. Although single-strategy instruction promotes students' proficiency on specific skills (e.g., main idea, question generation), accruing evidence suggests that complex text comprehension requires strategy combinations (Baxter & Reddy, 2007). Compared to narrative text, however, few experimental studies have investigated multiple-strategy approaches to improving struggling readers' comprehension of social studies text in the middle and secondary grades (Edmonds et al., 2009). Reciprocal Teaching is a guided teaching strategy where small groups of students Improve their reading comprehension based on the scaffolded application of predicting, clarifying, questioning and summarizing (Palinscar & Brown, 1984). Reciprocal teaching is dialogical instructional that has been proved as an effective for comprehension instruction. As Iranian teachers have to obey centered curriculum, they have to perform lecturing method while it has many disadvantages. In lectures students are often passive because there is no mechanism to ensure that they are intellectually engaged with the material. Students' attention wanes quickly after fifteen to twenty-five minutes. Information tends to be forgotten quickly when students are passive. Thus, we have to finds out the methods engage students. The engagement model of reading comprehension development proposes that engagement in reading is the joint functioning of motivational processes and cognitive strategies during reading comprehension (Guthrie et al., 2000). In this perspective, highly engaged readers are both internally motivated and strategic, and less engaged readers show lower motivation and less use of strategies for comprehending text (Wigfield et al., 2008). Reciprocal Teaching is a guided teaching strategy where small groups of students improve their reading

comprehension by the scaffolded application of Predicting, Clarifying, Questioning, and Summarizing as reading strategies Reciprocal Teaching is an approach of evidence-based dialogical instructional that has been shown to improve reading comprehension in literacy. The four strategies of reading comprehension that traditionally have formed reciprocal teaching are predicting, clarifying, questioning and summarizing. These four cognitive reading abilities, through reciprocal teaching, are also applied to support and to solve the mathematics sentence problems (Meyer, 2014). Thus, the researchers innovated to apply the reciprocal teaching approach in mathematics learning by using four reading comprehension strategies, namely predicting, clarifying, solving and summarizing as the main stages for the students, and including individual presentations as the additional stages. Teaching and learning through Reciprocal Teaching is expected to motivate students' active participation in the class with the target of improving their lateral thinking ability (Priatna et al., 2018). Another instruction is Constructionist which tries to help reader to represent meaning, making reader follow inference which coherence the text. Also, reader make interference about occurrence to fill in gap in the text (Graesser et al., 2003). This theory involved three assumptions a) purpose of reading b) cohesion c) explanation. Reading intervention should be concerned based on those assumptions teaching those instruction aid students especially those who has difficulties in comprehension.

Constructivism gives readers exact predictions about making inferences. Although some inferences are made in the text clearly, other inferences are made ambiguously. This ambiguity would be solved if reader know what text he/she is reading in other word, the reader should enough knowledge toward text to predict inferences. So it's important for reader to know representations including surface code (exact wording of the text), the text base (idea unit representing the meaning) and a representation of the mental models embedded in the text (Snow, 2002). Thus, the first requirement to enhance comprehension skills is getting familiar with the structure of the text. The students should be taught to make question about literary question, concentrating on elements of stories. As for informative text, students will be taught to make general and specific questions.

Coherence

As text is verbal speech to make communication (Brown et al., 1983) The main elements which relate to the text are Co reference, Dexis, Substitution, Ellipsis, Conjunctive, Lexical cohesion, chronology, Scene change (Wilson et al., 1993; Zwaan & Radvansky, 1998) and highlighting, topic sentence, punctuation, Given new cues (Graesser et al., 2003).

The last part is the explanation whereby student learn how to use back ground knowledge .through reciprocal teaching we can enhance background knowledge (Hashey & Connors, 2003).

Present Study

In our study we adopted and further advanced the argument that there is need for identifying effective elements of a multiple strategies program, namely CAR. Accordingly, our first aim was to examine if both strategy instruction and CAR teaching contribute to the acquisition of the reading strategies and to the development young students. The second aim was to examine the effects of the appropriate intervention and so create condition which was practiced based CAR. The hypotheses guiding this investigation were as follows: as the levels of comprehension (literary, inferential and critical levels), we predicted that teaching comprehension skills through CAR can solve comprehension problems.

MATERIALS and METHODS

The available research in this area suggests that having students make semantic connection among words and using visual elements are recommended (Woolley, 2010). Participants were 40 fourth grader students from elementary schools in a medium sized Persian town. (Table1). Both classes are in public half day school. The instructed students of those classes are in all ability. The primary language of students is Persian. Because we were not allowed to collect data about parents' house hold income and education level, as indicator of socioeconomic status we asked the children how many books their family had at home. Most of the children indicated that their family had 12-20 books at home. According to independent ANCOVA there were no significant differences between condition in demographic data. Also, students were informed about principle and phases of comprehension strategies. The first session provides many books available for students, telling them to choose their favorite books. The second session the students choose their books based on favorite. Comprehension skills involved three levels: word, Sentence and discourse levels. As Iranian students has many problems in those levels, we practice with students to learn the difference between informative and literary text. The third session was cohesive inference instruction those instruction including finding clues to get some answers, putting in those clues to what they already know or have read. The fourth and fifth session, students will learn about cohesive inference. As this session was related to prediction skills (McKoon & Ratcliff, 1986). We use the first strategy of reciprocal teaching. As usual the students have many problems in this section so we start that's why we use fun activities to do it. one of main activity is visual practices (Duke & Del Nero, 2011).

In the fifth session we ask students to First, skim the poem to predict. Read once through to enjoy it. it can be fine if you spread text section on the card, spreading among group to predict what would be next. In the sixth Students work in pairs and then, as a whole class, ask questions after reading a text. Comprehension strategies include using a variety of question words to prompt students as they formulate (Oczkus, 2018). The seventh session is clarifying last session questions the eighth sessions is summarizing. After students have silently or orally read text , a student acting summarizes what has

been read. Other students with guidance from student leader may add to summary if students have difficulty summarizing, the teacher points out clues that aids construction of good summaries (Urquhart & Frazee, 2012).

Also, in each intervention class intervention class instruction was provided in small group after regular by teacher. The study involved pretest and post-test materials were administered one week before and after the intervention.

Table 1. Participant characteristics by conditions

<i>Condition</i>	<i>Experimental</i>	<i>Control</i>
<i>Number of participants</i>	20	20
<i>Sex</i>	Male	male
<i>Grade</i>	4	4
<i>Language primary spoken</i>	Persian	Persian
<i>Book at home (0-10)</i>	5	3
<i>Book at home (11-25)</i>	11	10
<i>Book at home (26-100)</i>	7	4

Assessment includes testing session lasted 90 min. In each class teachers collected data in whole classroom arrangement, students were not permitted to use any external aid throughout testing session. Written measures were used to assess students' acquisition of reading strategies as well as reading comprehension. At each session, students were first asked to read passage, apply all three levels step by step and answer a number of comprehension questions. our passages testing, four passages with 10 reading comprehension questions each were developed and administered to 40 fourth grader from other lesson the basis of students reading comprehension score three passages with 7 questions each were chosen for training study's pretest and posttest. Furthermore, with the teacher of the participating classes we discussed each passage and questions and they judged the finally selected passages and questions to be equivalent in interest values. None of these passages was assigned to any of the participating students during the instructional period. Explicit teaching was chosen as instruction form. The language rich classroom. These assessments were evaluated by a score on a 1 point which was specific to each level. Literal level was evaluated as follow: 0 (no response), 1 (a response based on two or more feature of the paragraph clearly demonstrating the link paragraph and what probably would come next) for each testing time interscorer reliability and Inferential level were evaluated as follow: 0 (no response), 1 (a response is identifying answer based on context. Critical level was evaluated as follow: As readers evaluate the

content and elements of a text, the focus shifts from constructing meaning to critically considering the text itself.

Training materials

For the first phase of training, worksheets for each strategy were handed to the students. This work sheet was Persian translation of *PIRLS 2016 SAMPLE PASSAGES* (Mullis et al., 2016) which designed for fourth grader students. They received a bookmark that depicted that name and a symbol of each the three levels of reading. 6 passages for the students, comprising topic of age-appropriate story, were selected for student practice of reading strategies during the second phase of training. Subject and texts for reading passages were obtained from PIRLS sample passages for the fourth-gr. In this condition, students are guided by a teacher who is Ph.D. in Persian literature and the experienced elementary school. The task of teacher was to model three levels and then led to continue practicing these levels. and students consisted of between 581 to 600 words. All passages were divided into paragraphs.

Control condition

During the course of training, control students were instructed in reading comprehension by their regular teacher. Traditional instruction including reading loudly; fluency and comprehension. After period of teaching, the control student would be assessed by the common test with CAR group.

Scoring

To test the effect of CAR learning after the 12-week we ran a repeated-measures multivariate analysis of variance (ANCOVA) with group (i.e. CAR class) and time (i.e. pretest and posttest) as the independent variables and the three test scores as dependent variables (i.e. literary level, inferential and critical levels). We conducted further analyses the three dependent variables using analyses of variance (ANCOVAs). We checked assumption of the ANCOVA and found them satisfactory.

RESULTS and DISCUSSION

The research question asked whether there are differences in reading comprehension between traditional instructing and CAR one after 12 weeks.

Table 2. Founding of Descriptive Statistic

Variables	Test	Group	Mean	Std. Deviation	N
Literary	Pre	CAR	2.85	.98	20
		TR	2.15	.81	20
		Total	2.5	.96	40
	Post	CAR	4.7	.57	20
		TR	2.85	.87	20
		Total	3.77	1.18	40
Inferential	Pre	CAR	1.15	.87	20
		TR	1.95	1.23	20
		Total	1.55	1.13	40
	Post	CAR	3.9	.78	20
		TR	1.95	1.23	20
		Total	2.95	1.42	40
Critical	Pre	CAR	1	.85	20
		TR	1.95	1.23	20
		Total	1.41	1.15	40
	Post	CAR	4.2	.95	20
		TR	1.9	1.07	20
		Total	3.05	1.53	40

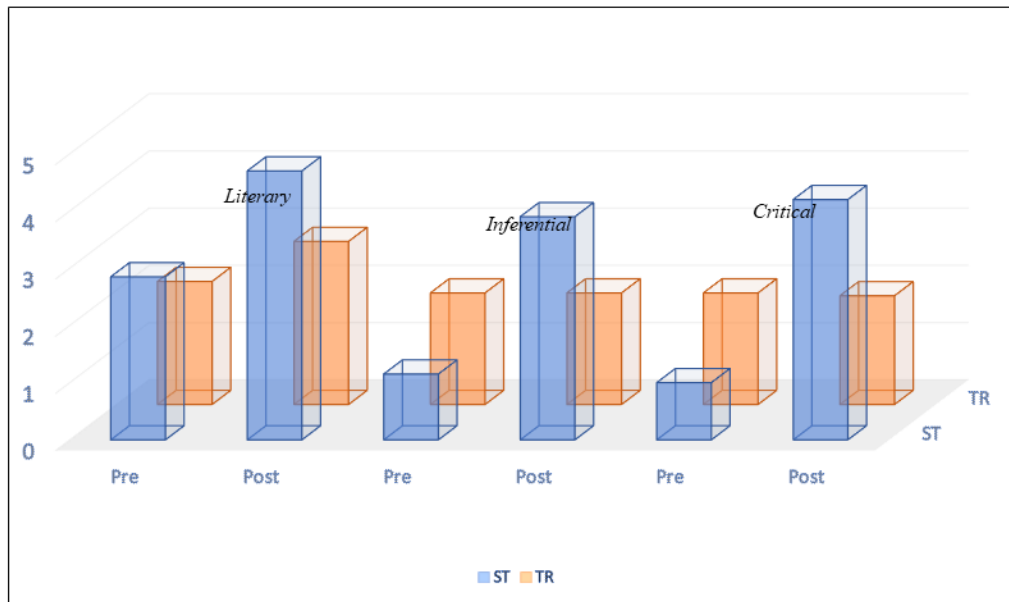


Figure 1. Literary, inferential and critical Means Base on Groups and Pre-Post Tests

Table 3. Founding of ANCOVA Test

Source	Sum of Squares	df	Mean Square	F	P	Eta Squared	Observed Power
Literary. Pre Test	4.28	1	4.28	9.64	.004	.207	.856
Method	21.84	1	21.84	49.09	.000	.57	1
Inferential. Pre Test	2.9	1	2.84	2.84	.1	.071	.376
Method	40.55	1	39.65	39.65	.000	.517	1
Critical. Pre Test	12.12	1	12.21	16.86	.000	.313	.979
Method	68.08	1	65.08	89.89	.000	.708	1

At table 3 is reported result of ANCOVA test, the post-test of literary, inferential, critical is dependent variable. According to the F and P value for literary (F=49.29, df=1, P < 0.001) effectiveness of CAR program after moderating role of the pre-test is significant (P=0.000). For the inferential according to the F and P value (F=39.65, df=1, P < 0.001) effectiveness of CAR after moderating role of the pre-test is significant (P=0.001), and also for the critical (F=89.89, df=1, P < 0.001) effectiveness of CAR program after moderating role of the pre-test is significant (P=0.000) (Table 5).

This paper examine how comprehension multi-strategy can improve student's comprehension. Thus, we provide the way for students to access book Reading comprehension because if the students have high interest in. More interested student read book, more easier teachers can map out comprehension strategy. This activity should be carried out regularly in the class" (Bano et al., 2018; Springer et al., 2017). We in this part did my best to know student's interest because it plays important role to enhance student's comprehension skills. Also, the latest research infer impact of interest to increasing comprehension skill (Asadi, 2018; Catts & Kamhi, 2017).

Although prior researches emphasize on effectiveness of the RT instruction to improve comprehension skills (Ahmadi & Gilakjani, 2012; Spörer et al., 2009) but never see we in those countries where has weak comprehension statistics, such as Iran. As there are many comprehension difficulties in word, sentence and discourse levels .So Constructivism modelling instruction along with RT is recommended. Previous studies recommend this strategy (Nunes & Bryant, 2003; Steiner et al., 1971). The first level of comprehension is literary. In this level students focused on reading the passages, hearing the words or viewing the images. It includes identifying the important and essential information. By guidance of teacher, students can distinguish between the important and less important ideas.in this level the class are better than control groups because students are taught Constructivism model. It shows the students has many weak points in syntactic awareness, also, they have a limited vocabulary or background knowledge.one of main effective way to deal with this problem was providing books. To improve student's syntactic awareness we use discourse Van Dijk clarified those structures (Van Dijk

& Kintsch, 1983). Strategies of discourse comprehension. Given that high percentage Iranian has difficulties to result from the repeated measures ANCOVA confirmed the effectiveness of CAR strategy in a way that little differences are shown in literary level. we used ANCOVA. Except instruction both of group are equal According to the F and P value for literary ($F=49.29$, $df=1$, $P<0.001$) effectiveness of CAR program after moderating role of the pre-test is significant ($P=0.000$). In terms of inferential activities, we focus on cohesive and elaborative inference. As the students has little knowledge about it, they have taught by cohesive inference. Then, they got information elaborative inference. Yet, students were not transfer so we use visual activities such as Pixar's short movies. while we asked students to make inference of movies. It helps students to do it better when they read text, the statics show the experienced group has better function in posttest. Overall, Constructivism model, prediction skills to foster literary and inferential. For the inferential according to the F and P value ($F=39.65$, $df=1$, $P<0.001$) effectiveness of it after moderating role of the pre-test is significant. The main part of comprehension skill was critical level. As we did our best to engage students, we take reciprocal instruction seriously because it has wonderful effect on student to be mastered in critical thinking like analyzing, observing and communication. In agreement with this study Mafarji in 2020 examines relationship between critical thinking and self-concept based on reciprocal teaching while his statistical population was 120 Palestinian 10th grader (Mafarja & Zulnaidi, 2022). Then it is concluded that reciprocal teaching has the potential to improve critical thinking skills, academic self-concept. The difference between the experienced group and control group is significant. ($F=89.89$, $df=1$, $P<0.001$) effectiveness of CAR program after moderating role of the pre-test is significant ($P=0.0001$). Students who practiced CAR instruction attained higher scores in posttest. The results showed that the comprehension reading abilities and especially increase L1 comprehension acquisition, even though only 30% of the existing class time was used for CAR strategy instruction. Despite employing a careful methodology, a few limitations are worth pointing out. One limitation is different educational level between students. The COVID-19 made schools shut in Iran. The worth is just 70 percentage of student receive on line education so that we faced with varying interests, experiences, developmental maturity, background knowledge and abilities. Moreover, Inferential and critical levels require fostering students' cognitive skills. As Iranian education is content-centered, performing this strategy is disagree with what the contents suggest. Given that the teachers focus on traditional instruction, only a few teachers cooperate with us. Overall, this study strengthened evidence for effectiveness of CAR strategies on various areas of L1 learning. The finding suggest that CAR strategy can be readily incorporated into existing L1 curricular without major changes to the curricula. Although the participants in the current study where Persian fourth grade student with different comprehension abilities would also benefit from CAR instruction because it can build comprehension abilities.

Conclusion

This study was based on the underpinnings of CAR to improve Persian Fourth grade students' comprehension which is process of applying reader's comprehension abilities to interpret texts in order to construct meaning with one teacher and a professor of university to instruct CAR instruction. The program started with 40 students into experienced and control groups. Given that Iranian curriculum is not flexible and the students has many problems to comprehend texts, we can able to analyze texts. Thus, the students have wonderful function into interpretation text.

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