

The effects of reciprocal teaching on the perceived reading comprehension self-efficacy of 2nd-grade pupils: Reflections of the pupils and their teacher

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ABSTRACT

This study examined the effects of reciprocal teaching on the perceived reading comprehension self-efficacy of 2nd-grade pupils. The study was designed in pre-post test experimental design with a control group. Qualitative data was also collected from the intervention group students and the classroom teacher who carried out the intervention lessons. Participants consist of typically developing 2nd-grade pupils from a state primary school ($n = 34$) in Turkey. While the intervention group used a total of 36 lesson hours of reciprocal teaching techniques for 6 lessons per week for 6 weeks, the lesson was taught in traditional ways in the control group. According to the research findings, there was no statistically significant difference between the post-test scores of the intervention and control groups. Students stated that the most difficult reciprocal teaching strategy was summarizing, while the easiest was the prediction. As a result of the observations of the classroom teacher who conducted the intervention lessons, the positive effects of reciprocal teaching on the pupils' reading comprehension were emphasized. For this reason, it is suggested that the use of reciprocal teaching in Literacy lessons should be widespread in Turkey.

Keywords: Reciprocal teaching, self-efficacy, reading comprehension.

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INTRODUCTION

It is inevitable for an individual to have reading comprehension skills to be equipped with the features required by the age and to be a lifelong learner. One of the main purposes of reading is to make sense of the text. When you read a text, the most effective way to understand that text is to use reading strategies. Reading strategies should be taught directly to students (Borko and Putnam, 1996; Duffy, 2002; McNamara, 2009; Pressley et al., 2006). However, it is known that teachers do not spare enough time to teach reading strategies in a regular classroom and they have limited knowledge in strategy teaching (Ness, 2008; Ness, 2011; Pressley, 2006; Rosenfield and Berninger, 2009; Sailors, 2009). Some researchers anticipate that future teachers as well may not be successful in teaching reading strategies. (DeGraff et al., 2015). In this case, it is thought that there is a need for experimental pedagogy research on reading strategies that can guide teachers.

Although reciprocal teaching (RT) has been around for some time in New Zealand and the USA and has become increasingly popular in the UK in recent years (Gilbert, 2018). It is still relatively unknown and not used much in Turkey. Therefore, this study is aimed to contribute to the international literature while inspiring researchers in Turkey. When the past RT studies are examined, it is noteworthy that although many RT studies have been conducted with secondary education (Gilbert, 2018; Klinger et al., 2015; Okkinga et al., 2018) and higher education students (Freihat and Al-Makhzoomi, 2012; Huang and Yang, 2015; Koch and Spörer, 2017; Navaie, 2018; Reshadi-Gajan et al., 2020), there are not enough studies with young children. For this reason, such a study has been designed with primary school 2nd-grade pupils, who can be considered as a young age group. It is thought that this research will contribute and inspire researchers who study reading strategy instruction, self-

efficacy and pedagogy, pre-service and in-service teachers, reading and comprehension.

Reading is a meaning-making process that involves complex mental skills, based on effective communication between the author and the reader, using prior knowledge (Akyol, 2012; Balci, 2013). The reading comprehension process involves complex mental processes such as finding meaning, reflecting on meaning, researching causes, drawing conclusions, and evaluating (Balci, 2013). Deep learners try to analyze the thought underlying what they read while creating an individual meaning from it (Marton and Saljö, 1997). Reading comprehension takes place by establishing a connection between what an individual reads and his daily life or previous knowledge (Ramsden, 2004).

Studies are revealing that there are high relationships between reading comprehension and reading self-efficacy (Unrau et al., 2018). Self-efficacy is a person's belief in his capacity to bring learning and behavior to the required levels (Bandura, 1977). Self-efficacy perception is effective in individuals' deciding to do a job, making effort, and persistence in that job by facing difficulties (Schunk, 1981). According to Bandura (1977), the self-efficacy of individuals is affected by the vicarious experience, performance accomplishments, verbal persuasion, and physiological and affective states. Ortlieb and Schatz (2020) on the other hand stated teacher and peer modelling, student mastery experiences and calibrated feedback as three important components that could support reading self-efficacy. The involvement of these components, which improve reading self-efficacy, in the RT process has been the inspiration of the researcher to design this research.

Reciprocal teaching is a reading comprehension technique that supports individual and cooperative learning. RT is an instructional technique that promotes reading comprehension through the use of four strategies: predicting, questioning, clarifying, and summarizing (Alfassi et al., 2009). RT, a socio-instructional approach based on Vygotsky's sociocultural theory (Vygotsky, 1978), is a kind of reading strategy teaching to enhance reading comprehension.

Pressley (1998) stated that RT encourages students to take a more active role in leading a group dialogue. These dialogues and small group discussions that students have with each other and with their teachers enable them to better understand the text they read collaboratively. RT begins with the teacher modeling how to use each strategy using an explicit strategy instruction through thinking aloud (Alfassi, 2004; Klinger et al., 2015). Leadership in the RT process gradually passes from teacher to student. Then, through guided practice, the teacher guides the students to use strategies in small groups, discuss and comment on the text they read. With Independent practice, the leadership of the learning process gradually passes to the students. Students apply the four RT strategies working in pairs or small groups,

passing the leadership alternately from one to the other. In this process, the teacher should encourage the students, give scaffolding and feedback.

The problem

The main problem of this research was "Does reciprocal teaching affect the reading comprehension self-efficacy perceptions of 2nd grade pupils?"

The sub-problems

1. Is there a significant difference between the pre-test and post-test scores of the pupils in the intervention group?
2. Is there a significant difference between the pre-test and post-test scores of the pupils in the control group?
3. Is there a significant difference between the reading comprehension self-efficacy post-test scores of the pupils in the intervention and control groups?
4. What are the reflections of the pupils in the intervention group and the classroom teacher who conducts the intervention lessons about the RT process?

METHOD

Research model

The research was designed in a pre-post test experimental design with a control group. Qualitative data was also collected from the intervention group (IG) students and the classroom teacher who carried out the intervention lessons (IL) to deeply understand the RT experiences of the students and to gain a detailed idea about the process.

Participants

Necessary ethics and research permissions to carry out the study was taken from the Ministry of National Education (MNE) in Turkey. The principal of the school where the experimental study conducted and the classroom teachers of the intervention and control groups were consulted and permission was obtained, and the scope and purpose of the study were explained to them. By meeting with the parents, the children were approved to participate in such a research process. Participants consist of typically developing 2nd-grade pupils from a state primary school (n = 34) in Marmara Region in Turkey. The demographic characteristics of the participants are included in Table 1.

Intervention (n = 17) and control (n = 17) groups were determined from the second grades of the school through

Table 1. Participant demographic information.

Characteristic	Intervention		Control		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Gender						
Female	7	41.2	7	41.2	14	41.2
Male	10	58.8	10	58.8	20	58.8
Age (M)	7.9		7.8		7.85	

the unbiased assignment. It was concluded that the data obtained from the groups showed a normal distribution according to the pre-test scores of the perceived reading comprehension self-efficacy (Kolmogorov-Smirnov-[Lilliefors], $p=.20$, $p>.05$). As a result of the independent samples t-test, it was concluded that the intervention and control groups were equal groups in terms of perceived reading comprehension self-efficacy before the intervention, that is, there was no significant difference between the groups before the intervention ($t(34)=-1.85$, $p=.07$, $p>.05$).

The female teacher, who conducted the experimental process and provides qualitative data to the research with reflective diary notes and views throughout the process, was 34 years old, was a teacher for 10 years, and had been working in the primary school where the experiment was conducted for 8 years. The teacher was interested in reading and comprehension studies and conducted projects in this field. She had implemented the "Reading Family" as an eTwinning project (<http://etwinning.meb.gov.tr/etwnedir/>). The project was aimed to create reading awareness in both families and children and to increase the number of families with a reading habit.

Design and procedures

Pre-experiment process

The teacher, who carried out IL, was given training on RT for 4 weeks. In this training, information such as the theoretical foundations of RT, application steps, teacher and student roles in the process, evaluation techniques were included. The teacher was shown sample videos on how to use RT during the lesson. Lesson plan and teaching materials preparation training were provided on how to implement RT. Lesson plans and teaching materials for IL were prepared with the consensus of the researcher and the teacher. In the preparation of the lesson plans and teaching materials, the book "Reciprocal Teaching at Work" written by Oczkus (2003) and the doctoral thesis about RT prepared by Kula (2018) were used.

Informative and narrative texts, which were approved by the Board of Education in terms of suitability for students' development characteristics, were determined

by the consensus of the teacher and the researcher. In the Literacy lesson, "Parmak Kuklaları (Finger Puppets)", "Böğürtlenli Dondurma (Blackberry Ice Cream)" narrative texts and "Uzaktan Kumanda (Remote control)", "Ornitorenk (Platypus)" and "Yaşasın Büyüyorum (Hooray I'm growing)" informative texts were used with RT strategies. Figures, hats, cards, worksheets representing strategies were used as intervention materials.

Intervention process

The experiment process was started by the classroom teacher on 04.03.2019 (4th of March) and lasted 6 weeks. During the intervention, the teacher and the researcher evaluated the experimental process by interviewing 2-3 times a week. Solutions were determined by exchanging ideas for the problems encountered in the process.

In the Literacy lesson, while the intervention group used a total of 36 lesson hours of RT techniques for 6 lessons per week for 6 weeks, the lesson was taught in traditional ways in the control group. The 1st week was determined as a trial week for the experimental process, and it was ensured that both teachers and students got to know and practice RT. RT strategies (predicting, questioning, clarifying, and summarizing) were applied in each lesson for the next 5 weeks. In general, the flow of a lesson was as follows: the teacher showed how strategies were used through modeling and thinking aloud (approximately 2 to 3 min for each strategy). Reading the text individually, in pairs, or groups (15-20 min). Students' application of individual, pairs, or group strategies (15 to 20 min). While the students were implementing the strategies, the teacher observed the students and provided them scaffolded instruction and feedback simultaneously (15 to 20 min). Lesson closing by evaluating RT strategies and the learnings of the day (5 min).

Process in the control group

Literacy lessons in the control group, by the curriculum set by the *MNE*, have continued with traditional practices. The content is similar to the intervention group. In this process, students read the text (15 to 20 min), responded to the questions asked by the teacher (15 min), and

teacher provided evaluation (5 min). In the context of the research design, no intervention was made to the control group, and the lessons continued in the same traditional way. These lessons were conducted with traditional methods conducted under the leadership of the teacher.

Data collection and measures

Self-efficacy perceptions scale for reading comprehension (SPSRC)

A one-dimensional scale with 29 items, the 3-point Likert scale with the extreme points labeled "doesn't fit me at all" (1) and "fits me perfectly" (3) developed by the researcher (Kula and Budak, 2020), was used as pre-post tests for intervention and control groups. The original scale was developed for 4th-grade students. To test the suitability of the scale to 2nd-grade primary school students, a trial application was conducted on 224 children with an average age of 8.36 years. The Cronbach's Alpha coefficient of the scale was calculated as .914 and Spearman-Brown Coefficient as .904. To verify the structure validity of the one-dimensional scale, the model fit indexes were examined by applying the confirmatory factor analysis (CFA) ($\chi^2/sd= 1.49$, RMSEA=.047, NFI=.92, NNFI=.97, IFI=.97, RFI=.91, CFI=.97, GFI=.85, AGFI=.83, RMR=.026) and it was revealed that the scale is a valid and reliable scale applicable to 2nd-grade pupils.

Teacher's reflective diaries

Reflective diaries are used for various purposes such as recording the lived experience, increasing learning, and activating metacognition (Moon, 1999, 2007). It helps the teacher to review the learning process and develop hypotheses (Lee, 2008), and think in more detail about the problems they encounter in the lesson. In this study, the teacher who carried out the intervention process recorded her observations, difficulties she encountered, and her notes on the experiment process in a reflective diary at the end of the day.

Teacher opinion form

"RT-teacher opinion form" was developed by the researcher to determine the opinions of the teacher who carried out the intervention process by using RT techniques in the process. In the development of the form, first, the relevant literature was scanned and draft questions were created. To ensure the content validity of the questions, opinions were taken from 2 language training experts, 1 curriculum and instruction expert. The questions were arranged in line with expert opinions and

the form consisting of 3 open-ended questions became ready to use. The interview with the teacher was conducted online by the researcher and lasted approximately 20 minutes.

Student opinion form

The researcher developed an "RT-student opinion form" for the intervention group students who were introduced to the RT technique in the IL to determine their opinions about RT, reading comprehension, and the intervention process. In the development of the form, first, the relevant literature was scanned and 16 draft questions were prepared. In order to ensure the content validity of the questions, opinions were taken from 2 language training experts, 1 curriculum and instruction expert. Also, the questions in the form were shown to 3 primary school 2nd-grade students who could not take part in the experimental process and the questions they did not understand were corrected. The questions were rearranged in line with the expert and student views and the form consisting of 10 open-ended questions became ready to use. The classroom teacher who carried out the experiment process conducted the interviews with the students.

Data analysis

In the analysis of the quantitative data obtained in the study, it was concluded that the intervention and control groups, whose normality of the data were tested, showed a normal distribution according to the pre-test (Kolmogorov-Smirnov-[Lilliefors], $p=.20$, $p>.05$) and post-test (Kolmogorov-Smirnov-[Lilliefors], $p=.20$, $p>.05$) scores of reading comprehension self-efficacy, and in this direction, parametric tests were used in the analyzes determined by the problems of the study.

Content analysis was used in the analysis of qualitative data. The qualitative data obtained from the students were coded as "s1, s2... s17". Reliability in qualitative research is related to the care, attention, credibility, and verifiability of the researcher in all stages of the design, implementation, and reporting of the research (Merriam, 2013). In this study, benefiting from expert opinions, including direct opinions of the participants in the findings, and writing the research report in detail are the measures taken to increase the reliability of the study. All of the intervention lessons were videotaped. During the weekly interviews, the interventions of the teacher were re-evaluated by the researcher and the teacher. The experimental process was structured by another researcher who was outside the research process, giving feedback on the application of the lessons. To provide consistency for the codes of the research, the data were coded by the two researchers, and a consensus was

reached by comparing the data coded by the two researchers. The consistency between coders was calculated as 90% using the formula $[\text{Consensus} / (\text{Disagreement} + \text{Consensus}) \times 100.00]$ (Miles and Huberman, 1994).

RESULTS

Quantitative results

The paired samples t-test was used to test the change in pre-post test scores of the students' perceived reading comprehension self-efficacy in the intervention and control groups. There was no statistically significant difference between the pre-post test scores of the intervention group [$\bar{x}_{\text{pretest}} = 2.01$, $\bar{x}_{\text{posttest}} = 2.21$, $t(16) = -1.74$, $p = .10$, $p > .05$]. There was also no statistically significant difference between the pre-post test scores of the control group [$\bar{x}_{\text{pretest}} = 2.10$, $\bar{x}_{\text{posttest}} = 2.10$, $t(16) = 0.34$, $p = .97$, $p > .05$].

The independent samples t-test was used to test the change in the post-test scores of the students' perceived reading comprehension self-efficacy in the intervention and control groups. No statistically significant difference

was found between the post-test scores of the intervention and control groups [$\bar{x}_{\text{intervention}} = 2.21$, $\bar{x}_{\text{control}} = 2.10$, $t(32) = 1.06$, $p = .30$, $p > .05$].

Qualitative results

Interviews were held with the students in the intervention group and the classroom teacher who conducted the intervention lessons. Using the reflective diaries of the classroom teacher, the opinions of the teachers and students on the RT process were determined (Table 2).

Students read a text many times to understand it better. They stated that they had the most difficulty in summarizing ($f = 10$) among RT strategies. The reflective diary of the classroom teacher who conducted the intervention lessons included the following observations about the students' implementation of strategies:

“When it comes to asking questions within strategies and summarizing, the process is slower than other strategies. Guess what they like best; In the guessing phase, my students are eager to share their ideas. They can easily write their predictions on their worksheets.”

Table 2. Students' opinions on RT.

Theme	Category	Code	f
Reading Comprehension	Effects on RC	Significantly positive effects	15
		No effect	2
	RC techniques	Reading over and over	5
		Reading carefully	3
	The most difficult RT strategy	Summarizing	10
		Questioning	4
Clarifying		2	
Predicting		1	

Note. RC: Reading comprehension, RT: Reciprocal teaching.

Teacher's reflective diary- 4th week

The teacher's opinions on RT strategies were as follows:

“We had been doing a lot of reading in Literacy classes before, but I did not make a clear observation that the students understood the text well. Each strategy of RT makes it very easy to understand the text in detail. In guessing strategy RT wants the student to generate a correct or incorrect idea about the text. Later, as the student reads the text, it makes him pay attention if the guess is wrong. Guessing about the text takes the student's interest and curiosity for the text to the next

level. In the strategy of asking questions, the student is constantly checking the text because he knows that he should ask questions. I think this part of the technique makes students' understanding of the text even stronger. Students constantly try to make sense of the text with questions in their minds, allowing them to analyze the text well. Explanation and summarizing make the student think about words he doesn't know; as well as providing an outline of the text. In this way, it is ensured that information is internalized by thinking at a high level, analyzing, and synthesizing. While observing this process, I thought we had the most progress in summarizing skills. When I said let's move on to the

summary part, most students were able to summarize the text with their sentences and on their own.”

Teacher's opinions

The teacher who carried out intervention lessons stated that the students had difficulty in group discussions in RT, but progress was made in the process.

“My students started to achieve group leadership by guiding each other in group work and asking questions. I join groups and help with modeling when they have little problems. I think group leadership improves my students' speaking skills. Group interaction in RT helps students pull each other up. They support each other with strong momentum.”

Teacher's reflective diary- 5th week

The teacher stated that teaching materials such as magnifying glasses, magician hats, question cards prepared for RT increased students' interest in the lesson and facilitated their implementation of strategies.

DISCUSSION AND CONCLUSION

This study examined the effects of reciprocal teaching on the perceived reading comprehension self-efficacy of 2nd-grade pupils. Findings revealed that RT did not have a significant effect on 2nd-grade students' perceived reading comprehension self-efficacy. While the pre and post-test mean scores of the control group for reading comprehension self-efficacy did not change before and after the intervention ($\bar{x}_{\text{pretest}} = 2.10$, $\bar{x}_{\text{posttest}} = 2.10$), it was noteworthy that the mean score of the intervention group increased after the implementation of RT ($\bar{x}_{\text{pretest}} = 2.01$, $\bar{x}_{\text{posttest}} = 2.21$). According to this result, it can be said that RT affects perceived self-efficacy more positively than traditional reading methods. However, this increase in the mean scores of the intervention group was not found to be statistically significant. These results were consistent with previous reading comprehension self-efficacy findings of Kula and Budak (2020b) and Van Keer and Verhaeghe (2005). In the previous study conducted by Kula and Budak (2020b), although the RT-IG reading comprehension scores showed a significant increase compared to the control group, it was observed that the students did not perceive themselves as adequate in reading comprehension.

Kula and Budak (2020b) thought that this situation was perceived as reading comprehension self-efficacy since students were used to having lessons with traditional methods. Lessons are conducted under the leadership of the teacher in classrooms where traditional methods are

used. On the other hand, in RT, leadership passes step by step from teacher to student. It can be thought that intervention group students who were not familiar with the culture of the independent study had difficulties in RT strategies and therefore did not find themselves sufficient in understanding what they read. When an individual thinks that a task assigned to him is difficult, this thought negatively affects perceived self-efficacy (Schunk, 2014). In the findings of this research, both the students themselves and the teacher who conducted the intervention stated that the students had difficulties in some RT strategies. It was thought that this strain might be one of the reasons why RT did not affect perceived reading comprehension self-efficacy.

Studies are revealing that RT intervention time is also an important variable that affects students' reading comprehension. In the study conducted by Westera and Moore (1995), students received RT in 3 different periods. It was concluded that reading comprehension improved more in groups with longer RT intervention time. In this case, one of the reasons why no significant change was observed in students' perceived reading comprehension self-efficacy in the present study might be the RT intervention time.

The present research was conducted with primary school 2nd-grade pupils, that is, children in the younger age group, as a whole class session. Rosenshine and Meister (1994) conducted a meta-analysis of 16 quantitative studies focusing on RT in higher education and found that RT is more effective for older students and those with poor understanding skills. Therefore, the young age of the study group can be considered as another variable affecting the results of this study. In the research conducted by Van Keer and Verhaeghe (2005), no effect was found on the perceived reading comprehension self-efficacy of second-year students. In the case of second-grade students, it can be assumed that such influences did not manifest themselves in students' preoccupation with thoughts about themselves. While interpreting these results, it should be taken into account that it is not easy to change the perceived self-efficacy of young children. Therefore, in future studies, it should be investigated whether the expanded intervention conditions are successful in producing significant effects.

The qualitative findings of the study showed that students and the teacher think that RT had significantly positive effects on reading comprehension. RT is a student-centered technique that supports students' reading comprehension with pre-reading, reading order, and post-reading strategies (Oczkus, 2003). Previous research confirms that RT is an effective reading strategy instruction technique that supports reading comprehension (Choo et al., 2011; Huang and Yang, 2015; Koch and Spörer, 2017; Kula and Budak, 2020b; Navaie, 2018; Pilten, 2016).

One of the common findings of many previous RT

studies was also encountered in the results of this study; students stated that the most difficult RT strategy was summarizing, while the easiest was prediction (Huang and Yang, 2015; Kula and Budak, 2020b). Although students found it difficult to summarize, they also considered this strategy most useful for reading comprehension (Huang and Yang, 2015). The classroom teacher who conducted the intervention lessons stated that the students were very eager to tell their predictions and that they read the text carefully to check the accuracy of their predictions in the prediction strategy, which activated their prior knowledge (Palincsar and Brown, 1984).

Another result of the present study was that students had difficulties in group discussions or in the dialogues in which they lead the group. It was noted that especially introverted students were reluctant to lead the group. Similar results were found in previous RT studies (Kula and Budak, 2020b). It was observed that the collaborative group work, which is an important part of RT, did not progress successfully due to the students' poor group discourse skills (Hacker and Tenent, 2002). It may be necessary for both the intervention teacher and the students to use RT strategies for a longer period to eliminate these problems.

RECOMMENDATIONS AND LIMITATIONS

As a result of the observations of the classroom teacher who conducted the intervention lessons, the positive effects of reciprocal teaching on the pupils' reading comprehension were emphasized. For this reason, it is recommended that the use of reciprocal teaching in Literacy lessons should be widespread in Turkey. Practices of reciprocal teaching techniques should be included in the Literacy curriculum in Turkey, and teachers' knowledge and awareness of reading comprehension strategies should be increased through in-service training.

It was reported by the teacher who conducted the intervention lessons that the pupils had difficulty in group discussions during the RT process. Students in Turkey should be exposed to more collaborative work in the learning-teaching process. In this context, it is thought that teachers, school administrators, and parents need informative and encouraging training about student-centered approaches.

There are some limitations of the study. One of the limitations of this study is the measurement tool used to determine students' perceived reading comprehension self-efficacy. This type of Likert scale can be difficult for students in this age group to make sense of. For this reason, it can be suggested for future researches that students fill in such scales under the guidance of an adult.

In future studies, different study designs can be

preferred and changes in reading comprehension self-efficacy can be observed. Because different study designs are known to cause different effects on self-efficacy (Unrau et al., 2018).

Measuring other psychological variables such as reading motivation and reading interest that may affect students' self-efficacy perceptions was not among the problems of this study. In future research, considering other psychological variables as well as self-efficacy may provide a way to reach meaningful results.

In the study, the intervention was performed in a total of 36 lesson hours in 6 weeks. It may be useful to examine the effects of longer-term interventions in subsequent research. Also, during the intervention process, students can write a reflective diary to determine their progress in the process from their perspective.

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