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Effectiveness of reciprocal teaching strategy on grade eight students' academic self-regulated learning in English reading class

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Abstract
The purpose of this study was to investigate whether the reciprocal teaching method may improve academic self-regulated learning of eighth-grade English learners. To achieve its goal, the study employed an explanatory sequential design, a mixed method research design based on two phases. Phase one involved the collection of quantitative data by using a pretest-posttest Nonequivalent Control Group design. Academic Self-regulated Learning Questionnaire was used to collect quantitative data of students. Phase two data, which were qualitative, were collected in response to the findings of the quantitative data through semi structured interviews. All public elementary and high schools of province Punjab (Pakistan) were the target population. From population, one public high school of male and one of female were selected as sample from district Faisalabad (Pakistan) conveniently. The participants of study were grade eighth students. The intact classes were taken and classes were formed by pairwise matching of score in pre-test. These classes were randomly assigned to control and experimental groups. There were total 2 experimental groups (female and male) and two control groups (female and male). Traditional teaching method was used to give instruction to control groups, while experimental groups received instruction using reciprocal teaching strategy. In phase one academic self-regulated learning questionnaire was employed to collect quantitative data through pretest and posttests. Two-way ANCOVA and paired samples t.test were used for data analysis in phase one. Following the findings of phase one data, semi-structured interviews with the experimental groups were conducted to know about the experiences and perceptions of experimental groups about reciprocal teaching strategy. The qualitative data were assessed through thematic analysis. Researcher synthesized quantitative and qualitative data findings to derive results. Findings revealed that experimental groups' academic self-regulation enhanced through this teaching strategy. It is suggested that teacher training institutions as universities and colleges should include reciprocal teaching strategy in their training programs.

***Keywords*:** Reciprocal Teaching Strategy, Self-Regulated Learning, English.

Introduction

Global research considers reading to be a fundamental skill which students of English language need to master. Reading develops through deliberate practice and needs extensive skill development because it is not naturally part of human growth (Yuliyanti et al, 2018). Reading activities occur daily because people need to read newspapers, reports, communications along with various other written materials. Classroom reading activities help students gain important learning which enhances different areas of their personal life (Rodli et al., 2017). Reading offers valuable information while it creates leisure moments which leads to better language proficiency development. Learners gain information alongside knowledge and pleasure from participating in reading activities (Islam, 2020). The majority of reading definitions state that it represents a text-based approach to extract meaning (Yuliyanti et al., 2018).

The Reciprocal teaching strategy enables students to enhance their reading skills according to Palinscar and Brown since this method was established in 1984 for helping students understand texts. In reciprocal teaching the instructor demonstrates reading comprehension strategies to students before adopting a gradual approach where pupils take over responsibilities for these techniques. Students need training through practice using predicting, clarifying, questioning and summarising as fundamental components. The teaching strategies establish an organized method to read literature together with students and their instructor as described by Nurdianti et al. (2019). Reciprocal teaching operates as a collaborative instructional method which helps students advance their reading comprehension abilities through group support (Tarchi & Pinto,

2016). Teachers begin reciprocal teaching practices which are then replaced by students taking over to help them derive meaning from textual content (Blazer, 2007).

The concepts of self-regulated learning manifest in Vygotsky's sociocultural theory (Paris & Paris, 2001). Zimmerman (1989) sheds light on how students perform the three essential roles of self-regulated learning as specified by the Self-Regulated Learning Theory. Students need to build three SRL competencies including metacognition and motivation with strategic action (Winne & Perry, 2000). The self-regulated learner develops understanding about what they excel and lack proficiency in. The educators demonstrate expertise in learning methods while showing understanding toward personal requirements as well as individual interests. Such learners tend to pursue challenging activities when given the opportunity (Dinsmore, Alexander, & Loughlin, 2008). Persistent learners are motivated with the belief that continuous effort will bring them success in acquiring learning abilities (Zimmerman & Schunk, 2012). The learning process of reciprocal teaching includes three distinct student activities which support goal-setting alongside comprehension monitoring and understanding evaluation (Zimmerman, 1989; Paris & Paris, 2001). The students use metacognitive methods to transform the way they read. According to Zimmerman (1989) this concept suggests that interactive educational approaches develop student competence to regulate their reading activities. Reciprocal teaching creates a shared learning environment that brings students with varying reading skills together as one group (Vygotsky 1978). Within their ZPD students with stronger skills enable their peers with weaker reading abilities to learn better and become more motivated (Vygotsky, 1978).

The main educational purposes of reciprocal teaching for students include developing reading comprehension strategies and proper implementation of them and training students to self-regulate their learning (Azizzadeh & Bazargani, 2023; Doolittle et al. 2006). It covers the cognitive and metacognitive strategies and helps students increase their reading comprehension and thus become independent readers (Gomaa, 2015). Students are involved in cognitive and metacognitive activities during reciprocal teaching. They can use strategy accordingly, apply it to comprehend and finally monitor its implementation (Majeed & Ahmed, 2022). Self-regulated learner approach learning process in a thoughtful and confident way, sets goals proactively and establish plans to realize his own learning and reach his learning goals (Cleary & Zimmerman, 2004 as cited by Yigzaw & Fentie, 2013). Therefore, Reciprocal teaching is such a strategy which use guided instruction and discussion to enhance learner' reading comprehension, foster self-regulatory and monitoring capabilities among learners (Allen, 2003; Boonde, 2011; Rahmawati, 2018).

Objectives

1. To investigate the effectiveness of reciprocal teaching strategy on the self-regulated learning of grade eight students (female, male) in English subject.
2. To explore experiences and perceptions of students (female, male) in experimental groups about reciprocal teaching strategy at grade eight level in English subject.

Hypothesis

$H_0$1: There is no significant mean difference in academic self-regulated learning scores of female students (control and experimental) in pre-test and post-test.

$H_0$2: There is no significant mean difference in academic self-regulated learning scores of male students (control and experimental) in pre-test and post-test.

$H_0$3: There is no significant mean difference in academic self-regulated learning scores of all students (female, male) in control and experimental groups' pre-test and post-test.

$H_0$4: There is no significant mean difference in post-test academic self-regulated learning scores between the experimental and control groups, and no significant interaction between gender and group, after controlling for pre-test academic self-regulated learning scores.

Literature Review

According to Zimmerman (2002) self-regulation functions through three consecutive phases which form a cyclic process. Learning objectives and strategic preparation occur during the forethought phase for students. Students apply cognitive along with metacognitive and motivational methods throughout the performance phase to reach their learning objective. Academic skills grow better when students use learning strategies as development tools according to this concept. The self-reflection stage occurs after learning when evaluation processes take place. A self-regulated learner possesses the ability to assess the execution of their learning strategies together with their obtained results and feelings of self-contentment (Spörer & Schünemann, 2014). Learning results from self-regulated activities which incorporate cognitive strategies yield better effects than training cognitive strategies by themselves (Schünemann, Spörer, & Brunstein, 2013). According to Wigfield et al. (2008) self-regulated learning processes lead to substantial motivation growth among students.

Students need to determine their reading strategies according to each learning environment. The evaluation process of strategy implementation begins after choosing a proper strategy. Self-regulatory practices allow students to deploy a particular reading technique. The implementation of effective strategies requires planning and monitoring and assessing processes to enhance both reading abilities and strategic competencies of students. RT emphasizes not only the comprehension of the text being read by students but also the preparation for the application of the strategies they are acquiring for future reading tasks in a self-regulated way (Doolittle et al., 2006).

According to Ulpah and Sahly (2020) self-regulated learning stands crucial since independent attitudes lead students toward productive conduct that enhances their academic success. Researchers studied the effects of the Reciprocal Teaching model as it affected 8th grade student self-regulated learning. The research design utilized a quasi-experimental method which included two separate groups for control and experimental purposes. Data collection focused on self-regulated learning through the use of a questionnaire. The study produced substantial findings which demonstrated how the reciprocal teaching strategy affected student capabilities in self-regulated learning. The educational strategy helped students become more independent throughout their educational process.

McCallum (2014) established that through reciprocal teaching students gained control of their learning process while developing their comprehension monitoring skills. The teaching strategy builds students' reading comprehension skills while working either in small groups or as part of the whole class. Metacognitive awareness maintains a direct connection to self-regulation and reciprocal teaching for learners from different education levels. The study by Capanzana and Avilla (2017) investigated how Grade 9 students at a Philippine public high school benefited from using a union of self-regulated learning and reciprocal teaching methodology within reading comprehension and self-regulation domains. The research used a quasi-experimental design supported by the Self-Regulation Questionnaire (SRQ) to evaluate learner self-regulation abilities. The combination of Reciprocal Teaching with Self-Regulated Learning proved effective for enhancing the reading comprehension abilities of students according to the study findings. Through the research investigators demonstrated how reciprocal teaching helps secondary students develop self-regulation while improving their reading comprehension skills.

Pilonieta and Medina (2009) supported teachers in utilizing reciprocal teaching methods to help students improve their self-regulated learning abilities. Self-regulated learning emerges from this approach by placing students at the center and developing their ability to learn independently at all educational levels starting from primary school. Research results demonstrated that teaching students through the reciprocal method allowed primary students to develop self-regulated learning abilities. A modified version of reciprocal teaching known as 'Reciprocal Teaching for the Primary Grades' enabled researchers to improve comprehension instruction for primary educational levels.

According to Qohar and Sumarmo (2013) reciprocal teaching serves as an effective method to develop independent reading competencies in students. The researchers conducted research to identify how reciprocal teaching both improves mathematical communication skills and encourages students toward self-regulated learning. Participants in the research consisted of ninth-grade students while data collection used two assessments: mathematical communication assessments and self-regulated learning scales. The research data showed that reciprocal teaching improved mathematical communication abilities of students while simultaneously building their self-regulated learning competencies. The research demonstrated through compelling data that reciprocal teaching functions as an effective teaching method for developing student self-regulated learning capabilities.

Methodology

Research Design An explanatory sequential design of mixed method research was employed in which quantitative data were collected and analyzed in phase one. One of the quasi-experimental designs "Pretest-Posttest Nonequivalent Control Group Design" was used in phase one to investigate the effectiveness of reciprocal teaching on academic self-regulated learning of grade eight students in English subject. Based on the results of quantitative data, phase two data that were qualitative in nature were gathered through semi structured interviews and analyzed through thematic analysis.

Population

All grade eight students in public elementary and high schools of Punjab province (Pakistan) were target population. while all the students enrolled in public elementary and high schools in district Faisalabad were the accessible population.

Sampling and Sample Size

The researcher implemented convenient sampling to choose the sample. Two public sector schools consisting of one male public school paired with one female public school were selected from Faisalabad district. Students in male class were 55 and in female

class were 56 making the total sample of 111. The researcher conducted pretesting for all class students before separating them into control and experimental groups. The pairs matching procedure served for making groups enabling researchers to confirm that both initial groups maintained equivalent characteristics. Then the groups received their treatment through random selection. The conventional teaching method served as the instruction method for groups in the control while the experimental groups received instruction through reciprocal teaching strategies.

Table 1 *Distribution of the Sample for Phase 1(Quantitative)*

Groups	Female (School X)	Male (School Y)	Total
Experimental	28	27	55
Control	28	28	56
Total	56	55	111

Table 1 indicates the distribution of respondents into experimental and control groups. There were total 56 females in school X that were divided equally into control group (28) and experimental group (28). The male respondents in school Y were 55 that were also divided into control group (28) and experimental group (27). Thus total sample size was 111 participants.

Research Instrument for Quantitative Data

The Academic Self-regulated Learning Questionnaire (ASLQ) was utilized to evaluate the self-regulated learning of the students. This instrument was developed by Nambiar et al. (2022) and comprises 36 items. The instrument is grounded in the three phases of Zimmerman's cyclical model of self-regulation. The questionnaire evaluated the three dimensions of self-regulated learning: Forethought, Performance Control, and Self-reflection. The questionnaire is structured for participants to respond to each item using a 1 to 5 point Likert scale, defined as follows: "1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, and 5 = Strongly Agree."

The students were administered the questionnaires in the classroom setting. Considering the students' background, the instrument was translated into Urdu. The translation process was conducted by two bilingual educators proficient in Urdu and English. To ensure the precision of the translation, the instrument was first translated into Urdu and subsequently back into English to verify its clarity. The final ASLQ was available in both Urdu and English. The creator of the tool has authorized its use for investigative purposes.

Pilot Testing of ASLQ

To ensure internal consistency, a pilot test of the ASLQ was administered to eighth-grade students who shared the same characteristics as the study's participants. These were previous session students from the same grade. Table 2 displays the sub-construct of ASLQ with Cronbach's Alpha value.

Table 2 *Cronbach Alpha Value and Relevant Statements of ASLQ*

S.#	Sub factor	Statements No	Cronbach Alpha Value	Total
1	Forethought (FT)	1 to 10	.847	10
2	Performance Control (PC)	11 to 27	.922	17
3	Self–reflection (SR)	27 to 34	.862	7
	Total		.952	34

The construct validity of the instrument was checked through Confirmatory Factor Analysis (CFA) through LISREL version 8.80. Initially, questionnaire consisted of 36 items due to the conformity factor analysis two items (01 and 24) were deleted due to poor factor loading i.e. below <.40 which indicated that they did not strongly relate to the intended construct.

Factor loading of ASL Questionnaire: CFA was performed on all 36 content valid items of ASRL questionnaire. 34 items were selected for final administration having item loading more than 0.40. the two items item no 01 and 24 were deleted because they had factor loading below 0.40. Table 3 presented the results of CFA.

Table 3 ***Factor Loading for Items in the ASLQ (CFA)***

Observed	Latent		
	Forethought (FR)	Performance Control (PC)	Self–reflection (SR)
S_1	.43		
S_2	.72		
S_3	.52		
S_4	.55		
S_5	.56		
S_6	.43		
S_7	.59		
S_8	.78		
S_9	.83		
S_10	.62		
S_11		.54	
S-12		.72	
S-13		.58	
S-14		.75	
S-15		.80	
S-16		.61	
S-17		.41	
S-18		.75	
S_19		.64	
S_20		.70	
S_21		.47	
S_22		.80	
S_23		.63	
S_24		.85	
S_25		.58	
S_26		.58	
S_27		.78	
S_28			.87
S_29			.61
S_30			.45
S_31			.48
S_32			.79
S_33			.77
S_34			.84

The standardized factor loading for CFA is displayed. At the five percent significance level ($p<.05$), almost all of the factor loadings were statistically significant.

Experimental Groups

The female experimental group comprised 28 students, whereas the male class consisted of 27 participants. While reading text through RTS students of class were divided into heterogeneous groups in every reading class. Each day different students were placed in groups so that students can daily interact with other class fellows. There were total 7 groups formed daily. One group consists of four students, with each student assigned a role based on the role cards provided. They were assigned the roles of questioner, predictor, clarifier, and summarizer. The intervention lasted six weeks (35-40 minutes daily), excluding days for pretests and posttests. Both experimental groups were taught thirty-one sessions (18 hours). Standard lesson plans based on the reciprocal teaching strategy were prepared from the eighth-grade English textbook. Oczkus (2018) guidelines were followed while designing the lesson plan. Each group member was

Control Groups

Both the female and male control groups had 28 students. They were taught with a traditional teaching method, the lecture method in a whole class setting. Standard lesson plans were also developed for the control group using traditional teaching methods. The grammar-translation method, usually teacher-centered, is mostly used in the classroom. The teacher stands in front of the class. He starts to read the text after that, he selects some students who are good at reading to revise the text in front of the class. After reading the whole chapter, questions at the end of the chapter are discussed. The teacher marks the question from the reading text to memorize. In this method, the students have little interaction with their peers, as teamwork is not encouraged in this teaching method.

The control and experimental groups were taught the same teaching material for the same length but with different instructional methods. To avoid bias, the researcher taught all groups (experimental and control) of both genders.

Summary of Intervention

Table 4 presents the summary of intervention.

Table: 4 *Summary of Intervention*

Phase	Activity	Goals
Before Intervention (one day)	Pre Test Administration ASLQ	• To get base line data about students.
Phase 1: Introduction and Demonstration of Strategies (Week 1)	**1.** Passage from the English textbook was taught through Reciprocal teaching strategy. Each day one strategy was demonstrated and previously demonstrated activity was reviewed. **Day 1-4**: Introduction and demonstration of one strategy daily. **Day 5:** Demonstration of 2 strategies (predicting and questioning). **Day 6:** Demonstration of 2 strategies (clarifying and summarizing).	• To introduce learners about reciprocal teaching. • To make students be able to describe each strategy.
Phase 2: Direct Instruction and Guided Practice (Week 2)	**Day 1-6:** All four strategies were modeled by teacher at once during reading a passage daily for a week, so that students can see the whole picture of Reciprocal strategy. **2.** The teacher played the role of leader and student responded the questions asked by teacher regarding the passages. The students also noted their responses in Reciprocal Teaching Worksheet.	• To show the whole picture of reciprocal approach and to understand when and how to use four key strategies during reading a passage clearly and systematically. • To perform guided practice of reciprocal teaching in groups.
Phase 3: Teacher-Student Group (Week 3)	**1**. The whole class was divided into group of 4 in which each member played their assigned role i.e. predictor, questioner, clarifier and summarizer. **2. Day 1-6:** Each day the teacher started the session by acting as a leader of the groups. After reading one passage the responsibility to lead the group was shifted to students. One volunteer from each group led the discussion and by using four strategies the entire text was finished.	• To shift the responsibilities of reciprocal teaching to students gradually.
Phase 4: Student Led Groups (Week 4-6)	**1.** Students worked in group and organize whole reading process by themselves. They took their roles (Predictor, Questioner, Clarifier and Summarizer) **2.** Among four students one voluntarily became the group leader to lead the discussion. He/she also took one role from the reciprocal teaching strategy. **3.** Teacher served the role of observer and guide throughout the reading. She facilitate and provided assistance to those who need it.	• To make students independent in the use of reciprocal teaching strategy. • Student led groups
Post Intervention (one day)	Post-test administration ASLQ	• To collect post intervention data.

Qualitative Phase

Following the post-test results, six participants from each experimental group (female and male) were chosen for semi-structured interviews, resulting in a total of twelve interviewees. The interviews were carried out to gain a more profound understanding of the intervention. Each respondent required around 10-12 minutes for the interview, resulting in a total time of 1 hour and 30 minutes. A sheet was used to record the participants' responses, and they were also videotaped**.**

Table 5 *Table 5 Distribution of the Sample for Phase 2(Qualitative)*

Participants	Female (School X)	Male (School Y)	Total
High Achievers	2	2	4
Average	2	2	4
Low Achievers	2	2	4
Total	6	6	12

The main research question was formulated and subsequently expanded into two sub questions in order to accomplish the study's objective.

Data Analysis

The reciprocal teaching strategy's effectiveness was evaluated using two-way ANCOVA and paired sample t-test. Paired sample t-test was carried out to examine the mean difference between the experimental and control groups' pre-test and post-test scores. The use of two-way ANCOVA enabled a more precise evaluation of the intervention's impact on post-test score of academic self-regulated learning, as well as an inquiry into the main and interaction effects of group and gender. In phase two, interviews were conducted to collect qualitative data from experimental groups that were analyzed through thematic analysis. The purpose of qualitative data was to take deeper insights from experimental groups about the intervention. Quantitative and qualitative data were integrated at the end of study to know the effectiveness of intervention.

Results of the Study

Hypothesis-1

$H_0$1: There is no significant mean difference in academic self-regulated learning scores of female students (control and experimental) in pre-test and post-test.

Table 6 *Results of Paired Sample t-test for Mean Difference in Pre-test and Post- Test score of Female in Control and Experimental Group in Academic Self-regulated Learning Questionnaire*

Group	*N*	*Pre-test M(SD)*	*Post-test M(SD)*	*MD*	*t-value*	*df*	*p-value*
Control	28	2.17(0.22)	2.34 (0.16)	-0.17	-3.43	27	.002
Experimental	28	2.46(0.31)	4.16(0.19)	-1.69	-25.65	27	.000

The control female participants (N = 28) showed limited progression in their self-regulated learning ability because their pre-score were 2.17 (SD = 0.22) while their post-score increased to 2.34 (SD = 0.16) at a significance level of p = .002. The experimental group (N = 28) experienced a significant improvement because their pre-test mean score (2.46, SD = 0.31) grew to 4.16 (SD = 0.19) which created a mean difference of -1.69 and t (27) = -25.65 with p < .001. The experimental group that used reciprocal teaching demonstrated a substantially superior impact on self-regulated learning compared to the traditional teaching method implemented by the control group.

Hypothesis-2

$H_0$2: There is no significant mean difference in academic self-regulated learning scores of male students (control and experimental) in pre-test and post-test.

Table 7 *Results of Paired Sample t-test for Mean Difference in Pre-test and Post- Test Academic Self-regulated Learning Score of Male in Control and Experimental Group*

Group	*N*	*Pre-test M(SD)*	*Post-test M(SD)*	*MD*	*t-value*	*df*	*p-value*
Control	28	2.16 (0.22)	2.28(0.16)	-0.12	-1.57	27	.128
Experimental	27	2.37 (0.31)	3.85(0.30)	-1.48	-20.32	26	.000

Self-regulated learning scores of male participants in the control group showed a minimal non-significant growth between pre-test (2.16; SD = 0.22) and post-test (2.28; SD = 0.16), yielding a mean difference of -0.12 which failed to reach significance with t (27) = -1.57 p = .128. The experimental group comprising 27 participants achieved a significant improvement in self-regulated learning because pre-test scores increased from 2.37 (SD = 0.31) to 3.85 (SD = 0.30) during post-test. The statistical analysis produced a -1.48 mean difference (p < .001) with a significance value of -20.32 t (26). Results showed that male participants achieved only limited progress with normal teaching so the experimental reciprocal teaching strategy produced substantial improvements. The experimental group's test results disproved the null hypothesis.

Hypothesis-3

$H_0$3: There is no significant mean difference in academic self-regulated learning scores of all students (female, male) in control and experimental groups' pre-test and post-test.

Table 8 *Results of Paired Sample t-test for Mean Difference in Pre-test and Post- test score of Control (female, male) and Experimental (female, male) Group in Academic Self-regulated Learning Scores.*

Group	*N*	*Pre-test M(SD)*	*Post-test M(SD)*	*MD*	*t-value*	*df*	*p-value*
Control	56	2.17(0.20)	2.31 (0.22)	-0.14	-3.22	55	.002
Experimental	55	2.42(0.31)	4.01(0.29)	-1.59	-31.29	54	.000

The control groups exhibited a modest increase in self-regulated learning scores, rising from a pre-test mean of 2.17 (SD = 0.20) to a post-test mean of 2.31 (SD = 0.22), resulting in a mean difference of -0.14 that achieved statistical significance, t (55) = -3.22, p = .002. The experimental groups demonstrated a significant enhancement, with mean scores increasing from 2.42 (SD = 0.31) at pre-test to 4.01 (SD = 0.29) at post-test. The mean difference of -1.59 was statistically significant, t (54) = -31.29, p < .001. The results demonstrate that although both groups improved in self-regulated learning, the reciprocal teaching strategy employed in the experimental group resulted in significantly larger enhancement than the typical method utilised in the control group. Therefore, null hypothesis is not supported.

Hypothesis-4

$H_0$4: There is no significant mean difference in post-test academic self-regulated learning scores between the experimental and control groups, and no significant interaction between gender and group, after controlling for pre-test academic self-regulated learning scores.

Table 9 *Results of Two-Way ANCOVA for Post-test of Academic Self-regulated Learning Questionnaire*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	81.064[a]	4	20.266	358.241	.000	.931
Intercept	13.337	1	13.337	235.758	.000	.690
Pre-ASLR	.008	1	.008	.144	.705	.001
Gender	.912	1	.912	16.126	.000	.132
Group	63.988	1	63.988	1131.110	.000	.914
Gender * Group	.401	1	.401	7.086	.009	.063
Error	5.996	106	.057			
Total	1189.366	111				
Corrected Total	87.060	110				

a. R Squared = .931 (Adjusted R Squared = .929)

A two-way ANCOVA evaluated reciprocal teaching strategy effects on grade 8 students' (male and female) academic self-regulated learning. The research utilized gender (male and female) as one factor and group (control and experimental) as the other factor. The research tested academic self-regulated learning through Time 2 post-test scores obtained from the Academic Self-regulated Learning Questionnaire. The variables in Academic Self-regulated Learning Questionnaire pre-test scores at Time 1 were used as covariates for controlling participant differences. Post-test scores between male and female participants showed a statistically significant gender difference which produced a moderate effect size (Partial Eta Squared = .132) according to a F (1, 106) = 16.126, p < .001 statistic. The experimental group students outperformed control group students substantially in terms of self-regulated learning post-test scores as indicated by F (1, 106) = 1131.110, p < .001 along with a very large effect size (Partial Eta Squared = .914). The experimental intervention demonstrates different results for male and female participants as shown by the significant F (1, 106) = 7.086, p = .009 (Partial Eta Squared = .063) value. The results from two-way ANCOVA testing revealed insufficient evidence to validate the null hypothesis stating that there is no considerable mean difference in reading comprehension scores between groups along with no gender-based group interaction when pre-test academic self-regulated learning scores serve as a control factor.

In terms of outcomes, female students benefited more from the intervention. The female experimental group had a mean difference of −1.69, ranged from 2.46 to 4.16, whereas the male experimental group yielded a mean difference of -1.48 ranged from 2.37 to 3.85. Differences observed were statistically significant (p <. women (diff = 1.39; p = 0.045) suggesting the strategy had a bigger impact on female students' self-regulated learning. The research shows that gender functions as a significant factor that influences the impact of

reciprocal teaching strategy on self-regulated learning. Female students made larger improvements than their male counterparts through the application of the reciprocal teaching strategy for self-regulated learning.

Qualitative Data Analysis

The semi structured interviews were conducted with experimental group for taking deeper insight into the experiences and perceptions of students with reciprocal teaching strategy. Two sub questions were formulated to get insight from participants that were analyzed through thematic analysis.

Question 1: Do you interested in reading work with this strategy?

Table 10 *Themes from Question 1 of interview*

Themes	Descriptive codes	Example Quotation
Independent Reading and Enhanced Comprehension	Independent reader, reading additional text, improved comprehension of texts of other subjects, reading books/stories.	**Participant 1 (male):** *Yes, I am very satisfied with reading with this strategy. It has made me an independent reader now.* **Participant 2 (female):** *Other school subjects in English can easily be read and comprehended with this teaching method.*
Improved Language Skills	Enhanced language skills, better reading and speaking skills, language improve, language command	**Participant 4 (male):** *I think this strategy can be helpful in comprehending other subjects' text that is in English. My language skills have improved now.*

Question 2: In what ways do you think your ability to regulate your own learning has improved since you adopted this strategy?

Table 11 *Themes from Question 2 of interview*

Themes	Descriptive codes	Example Quotation
Self-Regulation	Independent reading, managing assignments, a self-dependent learner, responsibility of reading.	**Participant 1 (male):** *I have learned how to manage any reading assignment myself.* **Participant 6 (female):** *I became a self-dependent learner.*
Self-Awareness and Critical Self-Assessment	Self-awareness, analyzing one's work, evaluating strengths and weaknesses, identifying errors and learning deficiencies.	**Participant 2 (male):** *This strategy helped me to regulate my own learning. I developed self-awareness and assessed my difficulties and drawbacks while learning.* **Participant 1 (female):** *I have developed the habit of analyzing my work to ensure that it is error-free.*

Discussion

The purpose of this study was to determine the impact of a reciprocal teaching technique on academic self-regulated learning among grade eight students (girls and boys) in English. Quantitative data were collected using the Academic Self-regulated Learning Questionnaire developed by Nambiar et al. (2022). An explanatory sequential mixed method study design was adopted, with quantitative data collected and analyzed in phase one using the paired sample t-test and two-way ANCOVA. In phase 2 semi-structured interviews were used to collect qualitative data based on the findings of phase 1 data, which were then evaluated thematically. Findings revealed that students with the reciprocal teaching method had a higher average mean (M= 4.01) in the posttest than the control group (M=2.31). Posttest results also revealed that female experimental group (M=4.16) benefitted more than male experimental group (M=3.85) which indicated that strategy effect gender differently. Themes of self-regulated learning emerged from interview data with students (female and male) reporting increased self-regulation and self-awareness as they learnt to handle reading assignments independently and started to critically evaluate their own work. Research data indicated that reciprocal teaching strategy effectively strengthens self-regulated learning capabilities of Grade 8 students. Through RTS students receive sustainable chances to use critical thinking skills during strategic learning activities that include predicting, questioning, clarifying and summarizing. The instructional methods enable students to develop essential components of SRL through goal setting activities and learning progress monitoring

as well as outcome evaluation procedures. The middle school students develop self-regulated learning capacities when they receive direct instruction through metacognitive-based teaching methods (Dignath & Büttner, 2018). According to Rosário et al. (2019) students' ability to take control of their learning develops alongside academic improvement when designing instructional practices properly as through reciprocal teaching strategies. This study confirms previous scholarly works who found the impact of this strategy in developing long-lasting self-regulated learning patterns through their response to explicit instructional strategy with cognitive purposes (Capanzana & Avilla, 2017; Kavani & Amjadiparvar, 2018; McCallum, 2014; Qohar & Sumarmo, 2013; Spörer & Schünemann,2014).

Conclusion

Both quantitative and qualitative findings revealed that students reading through reciprocal teaching strategies displayed better self-regulated learning abilities as well as stronger active participation rates than students in conventional teaching classes. Student-led instructional methods known as reciprocal teaching strategy improve academic self-regulated learning competence of grade 8 students. It is also concluded that female students benefitted more through reading with this strategy.

Recommendations

1. Educators should consider reciprocal teaching as a proper pedagogical method to boost academic self-regulated learning among elementary students.
2. Universities and colleges should incorporate reciprocal teaching strategy as an educational method in their training programs
3. The English subject teachers should participate in in-service training sessions that enable them to teach multiple language aspects using reciprocal teaching.

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