Impact of Reciprocal Teaching Method on Perceived Reading Skills of K12 Students

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Abstract: The aim of this study is to explore the relationship between reciprocal teaching (RTM) and self perceived reading skills of K12 students. This is a mixed method study; qualitative as well as quantitative data were collected and analyzed. For this purpose, experimental design and phenomenology approach were applied in this research. Through this, it was investigated that how much reciprocal teaching method of reading may impact in enhancing self perceptions of the teacher and college students and their reading skills at college level. In this way, experimental control group pre and post-test design adopted. Qualitative data were collected from the experiment group and teacher by introducing the tool developed by Melnick, etc., titled as Reader Self Perception Scale. Through random sampling technique (N = 72) K12 students of a public sector college were chosen. Results showed the very statistically significant variance between experiment and control groups.

INTRODUCTION

The aim of this study is to investigate the relationship between Reciprocal Teaching Method (RTM) and self perceptions of K12 in enhancing reading skills of college education. Reading skills have four basic elements[1] such as: phonological awareness, fluency, vocabulary and reading comprehension; among all reading comprehension is one of the most important element of reading skills[2]. RTM is the best solution for enhancing reading comprehension skill because it provides a variety of techniques to repeatedly read and comprehend the given text for several times. According to Unrau *et al.*[1], reading comprehension must be explicitly instructed at college level. In addition, teacher do not find enough time for implementation of new techniques in traditional classroom settings, on the other hand, students are claiming that the way of teaching of their teacher is boring some and not up to the mark[3]. Many of the

empirical researches[2, 3, 1] have mentioned that future teacher may struggle for demonstrating the methods of reading comprehension at all levels of schooling. A scientific investigation on the RTM and reading comprehension self perceptions can guide teacher and policymaker and other academicians is claimed to be benefitting in this scenario.

Despite the fact, that RTM has been adopted globally since long including the United States of America, New Zealand, India and Saudi Arabia[4, 5], it has not been completely introduced in the United Kingdom[5]. Similarly, in Pakistan, most people still unknown and hardly use it[4, 3]. Hence, the aim of this study is to collect empirical evidence for use and benefits of RTM in developing self perceptions and reading skills of college going students in Pakistani context. And to contribute to international literature while take part in motivating local scholars. However, a number of empirical studies have conducted with primary, elementary or secondary school

students[5-9], among them majority of the literature is available on the use of RTM with secondary school children. There are some studies that incorporate college students. Therefore, this study is therefore planned with K12 college students who are grown up in adulthood. This research will benefit and inspire language researchers and college teacher who study reading, perceptions, reading procedure, self-perception and pedagogy.

Sense of perceptions in development of reading skills: Reading is a measure of sense that needs complex mental skills and depends on the efficient communication between author and reader which according to Islam[3], uses previous data. These complicated mental states, according to him[10] include: making sense, weighing importance, exploring reasons, making decisions and analysing. Students who are reflective seek to translate the underlying thinking behind what they study while also making sense of it[11]. A reader understands what he sees for his daily life or previous data when an individual interfaces himself[9]. Unrau *et al.*[1], proclaimed a strong relationship between reading comprehension skills and self perceptions of secondary students. According to Bandura[12] self perception is a individual's belief system through which he can enhance his behavior of learning at required level. Similarly, Gilbert[5] stated that humans who believe positively in their own capabilities and potentials can take any challenging task at their own, for example can carry out teaching and learning of challenging jobs. The accompanying elements influence the self-support of people as indicated by Bandura[12], vicarious experience, accomplishments in execution, verbal influence and physiological and emotional states. To assist in teaching reading self-perception, three key segments are mentioned: teacher and methods exhibiting, students authority discussions and modified input[13]. The researchers were inspired to do this research after considering these portions in the RTM assessment which help to enhance reading perceptions.

Instruction method
Reciprocal teaching: According to Huang and Yang[6], the Reciprocal Teaching Method (RTM) is consisted of four stages in reading comprehension skills, such as questioning, summarizing, predicting and clarifying. The RTM is based on the anticipation and modification system.

The RTM has foundations of Vygotsky's sociocultural idea and scaffolding[14], based on teacher and student's self perception. The RTM develops college students to participate actively in leading a penal discussion[15]. By active participation they can enhance their better understanding of the text and improve their readability and comprehension[16,3]. For this, teacher teach

the K12 students using guided practice such as small group activities, small group discussions, repeated reading and discussion on the reading text are applied in this method. Independent reading practice is the main component of this method. They work in the group of two members or more up to 6 members of a group, among them one is the leader of the group. During this phase, the teacher should provide required feedback, especially descriptive feedback, appreciate the efforts of the students and provide the hints to them. We aimed at to investigate the impact of RTM on K12 student's self perceptions in reading comprehension skills. In this regard, three questions led this study in measuring the effect of RTM on K12 student's self perceptions and reading comprehension skills: what are the pre-and post-test scores of K12 students in experimental and control group the control group. Is there any variance exist between the two groups of K12 students regarding the self perception? If yes then, How much difference of self perceptions exist between the experimental and control group on reading skills? What are the perceptions of the leader of experimental group and their teacher?

MATERIALS AND METHODS

Methods
Research design: The study used a pre-test-post-test experimental design with a control group. To gain an in-depth perceptive of the K12 student's RTM understanding helped them in developing their reading skills. Phenomenology design used for the collection of self perceptions of the experimental group, consisted on K12 students and their teacher who conducted the treatment group lesson plans. In this study, two groups were selected. The experimental group was taught using a reciprocal teaching (RTM) reading method (X) and the control group was taught using a conventional teaching reading method (Y) (Table 1).

Sample and area of the study: The Federal Ministry of Education (MFE) provided the research study with fundamental moral standards and consents in Pakistan. The principal of the college where the experiment was administered as well as teacher from the experimental and control groups were consulted and approval was granted, the aim and objectives of the study were conveyed to them. Following a meeting with their parents, the K12 students were granted permission to participate in the

Table 1: Pre-test/Post-test control group design

Treatment groups	O_1	X	O_3
Control groups	O_2	Y	O_4

O_1 = Pre-test in treatment group; O_2 = Pre-test in control group; X = Intervention; C = Traditional method; O_3 = Post-test in treatment group; O_4 = Post-test in control group

Table 2: Description of the sample

Variables	Control groups		Treatment groups		Total	
	N	Percentage	n	Percentage	n	Percentage
Age (Mean)	17.45		17.56		17.5	
Gender						
Male	16	44.5	16	44.5	32	44.5
Female	20	55.5	20	55.5	40	55.5

N = 72 (experiment group, n = 36, control group, n = 36)

reciprocal teaching intervention (RTM). The RTM K12 students typically produce college K12 students (N = 72) from a government owned institution located in the in Sukkur Region of Sindh, Pakistan. The sample contributes of the RTM K12 students are displayed in Table 2.

The college K12 student's (n = 36), experimental and control (n = 36) group were selected by applying random sampling technique for unbiased assignment. The data received from the K12 students showed normal distribution typically based on the pre-test result on the Reader Self-Perception Scale (RSPS) (Progress factor I: $p = 0.42$; $p>0.001$; observational comparison factor II: $p = 0.22$; $p>0.001$; social feedback factor III: $p = 0.03$; $p>0.001$; physiological states factor IV: $p = 0.41$; $p>0.001$). The independent samples t-test revealed that the experimental and control group are nearly equivalent to RSPS (t score: (70) = 1.34, $p = 0.03$, $p>0.001$).

Treatment procedure: At the age of 44, the teacher had long been a teacher and worked long at the college for which the analysis had been conducted. He monitored the test cycle and provided data through the discussion of reflective journals. The teacher was enthusiastic about reading and understanding research and took up some initiatives in the area. Robert, E. Probst and Kylene Beer's book "Disturbing Thinking: Why We Read Matters" (2020) and the constructs of RTM from Kula[10] were used for lesson planning and a discourse. The teacher and the language researcher collected data and reported that the Education Board approved on the basis of its suitability for the formal features of the K12 students. The teacher began the treatment (intervention of RTM) on 14.10.2020 (14th of October, 2020) and it continued for 48 h during the period of 16 weeks. The teacher and researcher evaluated the perceptions of the experimental group 3 times weekly during experimental lesson plans. The exchange of views on the problems arising during discussion led to solutions.

The RTM lesson plans of the experimental group used standard strategies determined by the educational programme of the MFE. The topic is analogous to that of the experimental group. K12 students read the book for 20 min, responded to teacher questions for 05 min and received feedback from the teacher (15 min). The control group received no intervention and another teacher led the group sessions through traditional methods. The teacher was in charge of this group which was taught using intervention methods.

The experimental group instructed on a regular basis of reading lesson plans prepared on the RTM method, consisting of total 48 lesson plans, for 3 lesson plans per week for the period of 16 weeks. The first week of the experiment was designated as a practice week with the two teacher and K12 students learning and practising RTM. For the next 15 weeks, each group lesson plan used RTM strategies (anticipating, addressing, explaining and summing up). The group lesson plans looked like this: the teacher demonstrated how techniques were used by demonstrating and thinking aloud (about 15 min for each system), for example: 1) text reading (30 min) by individuals, couples or groups; use by students of individual, pair or group methods (30 min) and (15 min), respectively.

Data collecting tools
The Reader Self-Perception Scale (RSPS): Henk *et al*.[17] and Melnick *et al*.[18] produced and retested a four-dimensional scale with 47 questions on 5-point Likert scale as pre-post evaluations for experimental and control groups with specific focus named: Factor I: Progress, Factor II: Observational Comparisons, Factor III: Social Feedback and Factor IV: Physiological States. The scale was piloted to suitability for the K12 graduate student on 224 K12 students over an average period of 18.36 years. It was determined that the Cronbach alpha coefficient for the scale would be 0.914 and that the Spearman-Brown cofactor could be 0.904. This perception scale has been chosen because it was written in English and related to the grade level.

Teacher' reflections diaries: For example, reflections are used for the recording of individual experiences, for expanded learning, for meta-cognitive thinking[8]. It enables the teacher to consider the discussion of learning and develop theories[13] as well as to consider more deeply the problems raised by the group. The teacher who completed the experimental method in this study has maintained a reflection pad at the end of the day to report his ideas, challenges and notes on the research cycle.

Teacher perceptions battery: The researcher has developed a "RTM-teacher perceptions battery" to determine the insight of the teacher who used RTM procedures in the experimental methodology with the cooperation of three PhD colleagues. The necessary reading text was evaluated and drafting questions were created as part of instructions on the construction of this perception battery. Four experts of English language and an educator were consulted and counselling and guidance experts were approached in order to decide on the substance of the battery. Expert comments were used to group questions and a structure was constructed with three open-ended inquiries. The researcher was responsible for an online course of 90 min with the teacher.

Data analysis: According to the pre-test (Progress factor I: p = 0.42; p>0.001; Observational comparison factor II: p = 0.22; p>0.001; Social feedback factor III: p = 0.03; p>0.001; Physiological states factor IV: p = 0.41; p>0.001) and post-test (Progress factor I: p = 0.875; p>0.001; Observational comparison factor II: p = 0.226; p>0.001; Social feedback factor III: p = 0.053; p>0.001; Physiological states factor IV: p = 0.401; p>0.001) scores of reading skills self perceptions, the experimental and control groups, showed a significant difference on statistics. For this purpose, descriptive and inferential techniques of statistics were tested. In order to analyze qualitative data, thick discretion and theme formation of phenomenology was administered. The K12 student's qualitative data were coded as "R1, R2, ..., R36". Researcher's concern, consideration, validity and data throughout this research study procedure are referred to as "reliability" in qualitative research. Using expert opinions, including self perceptions of reciprocal teaching (RTM) K12 students in the findings and conducting a content analysis report RTM on the entire procedure used in this investigation to increase the reliability. The experimental group lesson plans were documented daily. The researcher and the teacher re-evaluated the teacher's experimental procedure after a week. Another researcher who was not involved with the research technique planned the experimental approach and provided feedback on how the group lesson plans were implemented. The reading text was coded by the three researchers to ensure uniformity in the research codes and an agreement was established by looking at the data coded by the three researchers. Using the approach [Consensus/ (Disagreement+Consensus)×100][19].

RESULTS AND DISCUSSION

Pre-test results: Prior to the experiment, the college students (K12) were asked to take a pre-test to determine their ability to understand the texts. Before treatment, it's important to know if it's been properly distributed and has equal ability. As a result of the pre-testing, we were able to determine the student's ability to understand the texts before the experiment. There was no significant difference between the pre and post test results, so, the post test analysis used ANCOVA.

A summary of the pre-test results for both experimental and control groups can be found in Table 3. The pre-test score of the experimental group was 54.9821 and that of the control group was 50.9829, according to the study. The p = 0.109 which is higher than 0.5 (two-tailed).

Post-test results: An analysis of independent t-tests with a critical value of 0.05 was utilized to assess whether scores obtained by students in experimental and control groups differed. Using the SPSS programme on a computer, the obtained data were analyzed and interpreted. The mean score of the experimental group was found to be 80.6802. 30.9212 were the average score of the control group. The p = 0.000 which was lower than 0.05 (two-tailed). A significant difference was found between the experimental and control group's post-test results.

As you can see from Table 4, there was a significant difference between the scores of the experimental group and the control group. This means that the reciprocal teaching method is more effective than the traditional teaching method of teaching reading.

Results of qualitative data: As well as the teacher who was in charge of the experimental group lesson plans, the K12 students in the experimental group were also analyzed. Reflections on the RTM measure were collected from teacher and K12 students using teacher' reflection journals.

Students in grades K12 read a piece of content several times before fully comprehending it (f = 06). The most challenging reading method (f = 14) of the RTM procedures, they said was questioning (Table 5). The RTM is slower than other methods for posing questions and summarising, according to the teacher. However, the easiest technique was summarizing and clarifying was declared as somewhat difficult among the all techniques. In the prediction stage, my children are eager to share

Table 3: Pre-test scores analysis

Groups	N	$\bar{x}$	SD	SEM
Experiment	36	54.9821	9.52492	1.21007
Control	36	50.9829	8.91091	1.00006

Table 4: Post-test scores analysis

Groups	N	$\bar{x}$	SD	SEM
Experiment	36	80.6802	12.7239	2.54321
Control	36	51.2651	08.0079	1.00540

Table 5: K12 student's self perceptions on RTM

Theme	Types	Signs	f-values
Perceptions on reading skills	The most challenging reading method	Questioning	14
	Reading techniques	Repeated reading	06
	Effects on RTM	No effects	06
		Reading carefully	11
		Significantly effects	12
	The easiest reading method	Summarizing	13
	Somewhat difficult	Clarifying	5
	Easy and interesting	Predicting	5

Reading skills and RTM

their thoughts (5). On their worksheets, they can make predictions with ease. The teacher said that the most of the K12 students found this RTM method significantly effective (12). Teacher's reflections journal-(week 14).

The teacher's perceptions on RTM: "We had done a lot of reading in advanced reading level group previously but I didn't express a realistic observable fact that the K12 students understood the book well". Every RTM Technique makes understanding the entire content quite clear. RTM requires students to generate a valid idea about the data when using the predicting stage. If the K12 student's prediction is incorrect, he is forced to pay special attention to the reading text while reading it. Making hypothesis about the content increases the K12 student's advantage and interest in the reading text. Using the summarizing stage, the K12 students constantly check the content because they know that they should ask questions. This stage of the RTM, in my opinion, focuses on K12 student's reading text understanding. K12 students are always attempting to decode the topic by asking themselves questions which allows them to break it down effectively. Clarification and a dilapidated allow K12 students to think about new vocabulary while also providing a summary of the topic. At the advanced level, data are guaranteed to be concealed by hypothesis, breaking down and incorporating. I accept that by observing this reading method, we were making the most progress in our summarizing. In response to my request, most K12 students were able to summarise the book using their own words and sentences. Teacher' perceptions (week-8).

RTM was a challenge for students but progress was made, according to the teacher who developed the lesson plans for the experimental group. "As a result of peer mentoring and asking questions, my K12 students began to develop a sense of collective authority. When group has minor issues, I join them and help them demonstrate. In most of the time, that group leadership helps my K12 students improve their public speaking skills. The K12 students in RTM help each other by working together in small groups. A lot of support is on their side". Teacher's reflections journal-15th week.

The teacher believed that showing RTM teaching kits such as amplifying glasses, performer caps and question cards gave K12 students an advantage in group and made it easier for them to accept techniques. The K12 student's self-perception in reading skills was examined in this study. The data revealed that RTM had a great influence on the self-perception of college K12 students in reading comprehension. While the pre- and post-test scores for reading comprehension in the control group did not change, the scores of control group did (pre-test scores: Mean = 50.9829, SD = 9.52492, SEM = 1.00006 and post-test scores: Mean = 51.2651, SD = 08.0079, SEM = 1.00540). When RTM was applied in experimental group, the experimental group's score increased which was significant (Pre-test scores: Mean = 54.9821, SD = 09.52492, SEM = 1.21007 and post-test scores: Mean = 80.6802, SD = 12.7239, SEM = 2.54321). It was found that RTM had a more statistically significant effect on the perceptions of K12 students than traditional teaching reading methods as per the results. The increase in statistic scores in the experimental group was statistically significant. These findings were supported by earlier research on reading self-perception[16, 2, 13]. However, even though the reading skills scores of the K12 students by Kula and Budak[19] study improved dramatically, they did not believe they were capable of understanding perceptions. According to Kula and Budak[19], this difference in experimental group reading skill's self-perception stems from K12 student's experiences with traditional teaching methods. When traditional procedures are used in the group, group lesson plans are carried out under the supervision of the teacher. Teacher and students take turns in RTM. The K12 students who were curious about the independent way of study may have found RTM procedures difficult and didn't think they were sufficient for understanding what they read, according to the study's authors. Intense dependence on an individual reduces his sense of self-perception[3]. The K12 students who participated in this study and the teacher who supervised the experiment both agreed that they had problems with different RTM strategies. In the past, it was assumed that this difficulty level was one of the reasons why RTM had no affect on reading perceptions. The K12 student's perceptions of RTM are affected by the length of the experiment, according to research. Researchers Anjum and Ali[4] studied the effects of giving RTM to K12 students at three

different times. Reading skills was improved in groups with longer RTM experimental times. As a result, it is possible that the lack of significant change in reading skill's self-perception among K12 students was due to the short duration of the RTM study. The K12 students, for example, were included in the current research study. The K12 students who are more established and those with helpless perception abilities are more likely to benefit from the use of the ethnology, according to a meta-analysis of 16 quantitative studies on RTM in advanced education conducted by Ortlieb and Schatz[13]. Also, the age of those who took part in the research study can be viewed as a factor in the study's outcomes. Understanding self-perception had no impact on eighth student's report reading, according to Koch and Sporer[7]. It is reasonable to infer that such impacts did not manifest themselves in the self-reflection of secondary schoolchildren. When deciphering these findings, it is important to remember that changing college K12 student's apparent self-perception is difficult.

The qualitative findings of the research study indicate that RTM has a positive impact on K12 student's skills. Pre-reading, understanding succession and present reading Techniques are used to help K12 students grasp what they're reading[3]. Research has shown that RTM is an effective reading procedure preparation tool that enhances understanding perceptions[6, 9, 15]. As a result of this investigation, RTM Made one of the usual discoveries. The most difficult RTM procedure for K12 students was questioning while the simplest was summarizing[6]. Repeated reading is the best method for reading skills, despite the fact that K12 students disliked it[6]. The teacher who was in charge of the lesson plans saw that the K12 students were eager to talk about their expectations and that they carefully collected the content to assess the accuracy of their gauges[20]. Also, students in grades K12 found it difficult to be the leader of a group discussion or discourse. The K12 introverts were reportedly reluctant to lead the group. In the past, RTM research has produced similar results[13]. Because of the K12 student's insufficient group talk abilities, the collective group movement which is a significant part teaching of RTM did not advance viably. To determine these challenges, both the experimental teacher and the K12 students may need to use RTM systems for a longer period of time.

CONCLUSION

This study confirmed the supremacy of Reciprocal Teaching Method (RTM) over the traditional methods of reading skills. We also found a positive relationship between RTM self perceptions. Study has revealed some new perspectives of RTM in perceived reading skills of college students.

LIMITATIONS

The sample of this study selected from only one government college for evaluation of K12 student's self perception and reading comprehension skills, that is first limitation of the research study. The larger and varied clustered sample from different government and privately owned colleges of K12 students of different age groups can be a more suitable sample for the future study[1].

In this study, other psychological factors that may influence student's self-perception convictions, such as motivation and interest were not examined. These variables may be considered in future research to achieve relevant results.

The preliminary experiment was completed in 48 lesson plans hours over 16 weeks. Later on, it may be beneficial to investigate the effects of longer-term therapy. During the experimental cycle, K12 students can also keep a reflections journal to track their progress from their own point of view.

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