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The Role of Metacognitive Activities for Teaching Reading Comprehension to ESL Undergraduate Students

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Article Details

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ABSTRACT

This mixed method research follows a pragmatic paradigm to investigate the efficacy of a collaborative action research approach to teaching reading comprehension using Metacognitive techniques, juxtaposed with traditional methods. Utilizing an experimental research design, the study involved a cohort of 410 undergraduate students, employing a triangulation strategy that integrated questionnaires, pretests, posttests, and teachers' journals as data collection tools. Participants engaged in two reading comprehension assessments and a 60-minute, self-paced teaching of four days a week of the selected texts for the period of three weeks. Analysis of the collected data sought to evaluate the impact of the collaborative action research intervention on students' reading comprehension, measured through the difference in the results of the pretest, posttest scores. The findings revealed a statistically significant improvement in reading comprehension scores for the experimental group ($M = 6.98000$) compared to the control group ($M = 3.55500$). These results provide compelling evidence for the effectiveness of the metacognitive teaching techniques, highlighting its potential to enhance students' self-efficacy and awareness in developing critical reading comprehension skills. This study opens avenues for further exploration into metacognitive strategies and their application in reading instruction.

Keywords: *Reading Comprehension, Metacognition Activities, Action Research*

Introduction

This study is analytical educational research which aims to explore the effects of metacognitive processes on the reading comprehension of undergraduate students of public sector colleges in Lahore. It is based on Favell's (1979) theory and will further decipher by exploring the metacognitive reading strategies that how cognitive monitoring, regulation, and self-reflection in educational settings may improve the academic performance, in reading comprehension tasks of undergraduate ESL students. In an attempt to specify the circumstances of English language learning in a Pakistani context, some scholars have rightfully expressed their opinion that, "The English language has secured a status of official language in Pakistan because it has been studied and understood in this area for more than 300 years. It was the East India Company who came to the subcontinent (now Pakistan, Bangladesh and India) five centuries ago. They brought their language and culture with them." (Mujtaba et al, 2021, p. 526-534)

The draft for National Educational Policy of Pakistan (2009) states that, "The English language competence of the students studying in private schools is far superior to the students of public sector schools." (p. 27) The use of metacognitive activities to empower students and learners are not very recent but gaining widespread recognition in recent years in teaching all subjects including second language (L₂).

They can evaluate their weaknesses and decide on strategies and adjust their plans based on outcomes. Metacognition allows students to be more expert-like in their thinking and more effective and efficient in their learning. While collaborating in small groups, students can also stimulate metacognition on one another, leading to improved outcomes (Stanton 2021, et.al).

Metacognition

Metacognition in the context of educational psychology is defined as a higher-order thinking process central to learning, involving active control over cognitive processes (Flavell 1979). Metacognitive skills allow students to identify concepts they struggle to understand, select appropriate learning strategies, implement those strategies effectively, evaluate their effectiveness, and adjust study plans accordingly, thus enhancing learning efficiency and performance (Stanton 2021).

In this study, metacognitive strategies are used as approaches to address reading comprehension challenges faced by undergraduate students of one public sector college in Lahore, Pakistan, while attempting reading comprehension tasks. The use of metacognitive reading strategies suggest that students may be aware of what approach may be useful when reading comprehension breaks down and, if comprehension continues to be filled with difficulties, what more appropriate strategy the student might use to attempt the given reading comprehension task.

Researcher's definition of metacognition further informs that:

Metacognition [is the] level of thinking that involves active control over the process of thinking that is used in learning situations. Planning the way to approach an learning task, monitoring comprehension, and evaluating the progress towards the completion of a task. (Ofodu, Adedipe's , 2011, p. 343)

Metacognitive strategies can be considered as cognitive tools for comprehending and monitoring of comprehension before, during and after reading which researchers (Pressley & Afflerbach, 1995) have researched to be effective. For purposes of this study, metacognitive reading may be further defined as techniques or tools that one may use to monitor and to control the reading process as well as comprehend written texts. Metacognition is the framework upon which metacognitive reading strategies are illustrated and defined as the active control over thinking, planning, monitoring and evaluation of learning tasks (Ofodu & Adedipe, 2011). It is "characterized by remembering, comprehending, focusing, attention, and processing information" (Babbs & Moe, 1983, p. 423). According to Babbs and Moe (1983), metacognition, in the context of reading comprehension, includes the knowledge of metacognition and adaptation of strategic reading behaviours. Other researchers (Carretti, Caldarola, Chiara, & Cornoldi, 2013; Eker, 2014; Myers & Paris, 1978; Baker and Brown, 1980; and Brown, 1985; Ofodu and Adedipe, 2011;

Pacello, 2014; Paris, Newman, & McVey, 1982) have emphasized metacognition in reading. The Process of Comprehension involves not only the recalling of information from the text and extracting themes but also engages in higher order thinking skills such as making a mental picture of the text, and understanding its structure. This mental activity poses different challenges for the second language learners. Therefore, the importance of this complex process has led to a conclusion that, “the most important thing in reading is comprehension” (Stanton, 2021). Reading comprehension is core to second language learning, as it covers the content-area learning in all subjects. In this respect Anderson (1999, p.1) contends that: Reading is an essential skill for English as a second/foreign language (ESL/EFL) students; and for many, reading is the most important skill to master. With strengthened reading skills, ESL/EFL readers will make greater progress and attain greater development in all academic areas.

The Framework of Pakistan’s National Curriculum for English

By virtue of its importance, English has been part of the curriculum in Pakistan since 1947 (Ministry of Education, 2002). In the former curricula, English was taught as an elective course for elementary to upper secondary levels (Ministry of Education, 2006). However, due to serious attempts to enhance the teaching and learning of English in the country, many substantial changes have been made to those curricula. The most significant change occurred in 1996 when the national curriculum required that English became a compulsory subject for all Pakistani students from grades 1 to 14. Integrating the listening, speaking, reading, and writing skills to accommodate the realistic needs of the country, this revised curriculum emphasizes the development of students’ language proficiency for communication, acquisition of knowledge, use of English in tertiary level studies, and professional development (Ministry of Education, 2006). The current English language curriculum (as described in the SNC) has been advised since the 2009 NEP. The 2017 National Curriculum Framework (MoFEPT, 2017) coined a set of principles for curriculum development (including English) and outlined a concrete framework for curriculum development. The curriculum was not prescribed closely, rather the National Curriculum Framework (NCF) described a framework for the development of teaching and learning, including language. In respect of language teaching and learning, the NCF avoided proscription, but noted that the ‘most preferred model to follow was a multilingual policy for education in which the mother tongue (i.e. L1) would be the medium of instruction in early grades and moving to L2 (Urdu and English) at lower secondary Grade [6] or secondary levels’ (MoFEPT, 2017:35). Although there appears to be a degree of uncertainty over exactly at which grade English learning and teaching should commence, the change in position was clearly towards commencement of English teaching and learning at a later stage of education. The 2020 Single National Curriculum (MoFEPT, 2020) is effectively the operationalization of NEP, NCF and NEPF in Grades 1–5. Describing itself as a roadmap (rather than a minutely prescribed curriculum), the SNC for English is broadly based on communicative approaches to language teaching, learning and assessment. It starts with what learners ‘can do’, identifying benchmarks – and then standards – as a series of skills (Nickson & Nudrat, 2022).

English Language in Public Sector Colleges of Pakistan

In Pakistan, the quality of English language education in public colleges is often criticized for being inadequate. According to a study conducted by Memon et al. (2016), many students in public sector colleges struggle with basic English language skills such as reading, writing, and speaking. One of the main reasons for the poor quality of English language education in Pakistan’s public sector colleges is the shortage of qualified English language teachers. According to a report, there is a significant shortage of trained English language teachers in the country (HEC, 2018).

Statement of the Problem

Pakistan's educational system is currently grappling with significant challenges that hinder its effectiveness, particularly in English language instruction. The predominant reliance on outdated and ineffective teaching methodologies from primary to higher secondary levels has resulted in graduates who lack essential English language skills, thereby diminishing their academic potential (Clement, 2018). A study by Hussain and Khan (2018) underscores the critical importance of an enriched curriculum and language learning strategies for enhancing English language comprehension among public sector college students. Despite the acknowledgment of metacognitive reading strategies as a potential solution to improve learning processes, there remains a dearth of research specifically examining their application among non-native English speakers in Pakistan, particularly in relation to reading comprehension. As proficient readers hone the ability to use metacognitive tools to enhance their engagement with texts (Anderson, 2003; O'Malley & Chamot, 1990), the educational community is compelled to explore how these techniques could alleviate difficulties faced by ESL students. Given the complexity of expository texts and the need for greater text structure awareness (Stein & Trabasso, 1981; Farrell, 2009), it is imperative that future research focuses on the role of metacognitive techniques in fostering reading comprehension among undergraduate ESL students in Pakistan's public sector institutes.

Significance of the Study

The findings obtained from this study could be used as a guideline for teachers to figure out that, what effective metacognitive strategies are and how they can teach students a repertoire of metacognitive reading strategies that would facilitate students' adjustment to the different types of texts they are reading. Furthermore, teachers will better understand several types of difficulties their students encounter during the reading process so that they can address them accordingly.

Apart from the aforementioned pedagogical implications, students themselves can also benefit from the findings of this study by reflecting on their own reading experience and realizing some of the hindering factors which impede their reading performance. They can learn more about the effectiveness of metacognitive strategies proficient readers use and apply them to relieve comprehension difficulties. Also, I believe that the findings will prompt researchers to extend the scope of this current study and continue to offer significant advantages for the improvement of both teaching and learning practices.

Aims and Objectives

The fundamental purposes of the study are:

1. To investigate the student's perception about their ability to Comprehend L2 (English as a Second Language) and the difficulties faced by students in L2 (English as a Second Language) comprehension task.
2. To explore the role of teaching metacognitive activities in the class
3. To compare the improvements in the scores in English reading comprehension tasks of the students after using metacognitive reading strategies in the experimental group and traditional methods in the controlled group.

Research Questions

In order to examine the use of metacognitive reading strategies among public sector ESL undergraduate students in a wide range of dimensions, the present study attempts to address the following questions:

1. Can students perceive their ability to comprehend and difficulties faced while attempting a reading comprehension task?
2. How teaching metacognitive reading strategies improve reading comprehension in ESL undergraduate students?
3. What similarities and differences exist between the scores of experimental and controlled group in reading comprehension?

Theoretical Framework

Flavell's (1979) conceptualization of metacognition as "thinking about one's thinking" paved the

way for in depth understanding of cognitive processes, self-awareness, and learning strategies. The theory proposes that individuals with strong metacognitive abilities attain the capacity to recognize, evaluate, and enhance their cognitive activities to achieve learning goals effectively. Flavell's insights into metacognitive knowledge, experiences, goals, and strategies have significantly influenced educational practices and interventions aimed at enhancing students' self-regulation and learning outcomes.

Hypothesis

Three assumptions / hypothesis are made for this study:

1. Metacognitive reading strategies are effective in increasing the reading comprehension of struggling readers (Eilers & Pinkley, 2006; Falk-Ross, 2001-2002; Mealey & Nist, 1989; Nash-Ditzel, 2010; Nist & Holschuh, 2000; Pressley & Afflerbach, 1995; Wichadee, 2011). According to Falk-Ross (2001-2002), the undergraduate college students enter college with limited to none reading comprehension strategies. College courses demands independent reading of complex texts (Pugh et al., 2000) as well as completing comprehensive assignments such as answering questions and writing summaries (Taraban, Kerr, & Ryneerson, 2004). Such tasks compel college students need to know how to monitor and to control their thinking and learning through metacognitive reading strategies (Baker & Brown, 1984; Brown, 1985; Cross & Paris, 1988; Flavell, Friedrichs, & Hoyt, 1970; Mokhtari, Sheorey, & Reichard, 2008; Wichadee, 2011).
2. Teachers do not typically teach metacognitive reading strategies to college students to increase reading comprehension (Dole, Duffy, Roehler, & Pearson, 1991; Grubb et al., 2011, 2013). Remedial college courses continue to cover “drill and practice of sub-skills” (Grubb et al., 2011, p. 1) rather than instruction in and the use of metacognitive reading strategies to increase reading comprehension.
3. The Pakistan public sector education system has been experiencing a dire literacy situation and that researchers (AIR, 2006; Hock & Deshler, 2003; Kamil, 2003; Mason, 2013) have advised that teaching practices like metacognitive reading comprehension strategies may improve it to some degree.

A New Perspective of Reading Comprehension

Researchers have worked for decades on the effects of teaching top-level structures, like analytical and detailed comparisons in reading classes in order to resolve problems in readers' comprehension (Durkin, 1979; Williams et al., 2007; Sharp, 2004; Gaddy et al., 2008; Ripley, 2007). One of the most recent studies, on reading and comprehension, is by Farrel (2009) who believes that pre-reading is an important activity in students' reading comprehension. Furthermore, Koda (2005) researched on readers' awareness in distinguishing the main idea and supporting details from the text and found it eminent in understanding the reading material as a cohesive text.

Metacognitive Reading Strategies

Despite the abundant research into second language reading strategies, Anderson (2003) demonstrated that relatively few factual studies have explored the context of comprehending the written text which can be a fruitful area of investigation. The following section is a review of previous research studies that have shed light on a series of issues on the nature of metacognitive strategies during the reading process.

Sheorey and Mokhtari (2001) developed the Survey of Reading Strategies (SORS) which consists of global, problem solving, and support strategies to discover reading strategies used by post-secondary students. These researchers toiled to find differences in metacognitive awareness of reading strategies between ESL and college students studying in the United States and native English-speaking American college students. They also worked to answer whether there were differences in performance based on gender. Results indicated that ESL used a greater number of strategies than the US students, and that gender poses no significant differences in the results. The

data was collected through the SORS which was specifically designed as a tool to measure both metacognitive strategies and other strategies, such as cognitive and support strategies.

Cognitive ability is one of the areas of thinking that Anderson and Krathwhol (2001) mentioned about in their taxonomy of thinking. Anderson and Krathwhol taxonomy (2001) that is a revised version of Bloom's (1956) original taxonomy includes six major categories (hierarchy levels) in cognitive domain. Anderson and Krathwhol (2001) composes of six levels that are Remembering, Understanding, Applying, Analyzing, Evaluating, and Creating. Out of these levels, the top three levels represent learners' higher order thinking skills. The teaching of reading strategy from specific textbooks and strategy instructions only emphasize on explaining the content and vocabulary and assessing knowledge through some comprehension questions (Kragler 2005). At the undergraduate level, most college instructors have an experience in elementary or secondary reading instruction. One reason for this problem according to Maxwell (1997) and Stahl (1992) is that there are only a few graduate programs that certify instructors in developing reading. With the above assumptions, the further studies focused on reviewing a new approach in teaching college students how to read critically to enhance performance in reading comprehension tasks. Ladan Javdan Faghat and Zaidah Zainal (2011) reported that in Iran, the focus of teaching English is mainly on grammar and vocabulary and short readings, thus the learners remained an ineffective reader. They discovered that the knowledge of text organization affected comprehension mainly in identifying and recalling the most important information in a text. Alireza Karbalaee (2010) stated that EFL university students in Iran are exposed to large volume of academic texts in English, but many of them entering university education are not equipped for the educational demands placed on them. He suggested that the integration of meta-cognitive reading strategy instruction within the reading tasks can enrich students cognitively and constructively in their comprehension tasks.

In the context of Pakistan, research on the effects of metacognitive strategies on ESL learners has been conducted in the perspective of the strategies students are already applying and might not be aware of, Abbasi (2018) or of the ESL students with sound English medium schooling (Batoool & Siddiquah, 2018). Two other studies have also been conducted on Pakistani university students from specifically science backgrounds, Bushra (2018) and Channa (2023).

Research Methodology

The research methodology adopts a pragmatic stance. It emphasizes the importance of actionable inquiry in which the focus is on practical application and problem solving along with theoretical knowledge. The Experimental research design incorporates Collaborative Action research, with a focus on systematically testing hypotheses and implementing interventions to bring about desired changes. By adhering to a rigorous and systematic research methodology, this study aims to contribute valuable insights to the existing body of knowledge in the field.

Research Paradigm

This research employs a pragmatic paradigm. In the realm of educational research, the pragmatic approach has emerged as a compelling and versatile methodology. This approach, grounded in the works of prominent philosophers such as Charles Peirce, William James, and John Dewey, emphasizes the practical application and real-world implications of research findings (Creswell & Creswell, 2018). By prioritizing the usefulness and efficacy of research, the pragmatic approach offers a distinct advantage in the field of education, where the ultimate goal is to foster meaningful learning and positive outcomes for students.

Sample / Setting

The population targeted for the research are undergraduate students of Government Islamia Graduate College for women Cooper Road Lahore. The students pursuing their BS4YDP are the focus. The BS programme offered by the college is affiliated with Lahore College for Women, University. Government Islamia Graduate College for women is one of the largest public sector

colleges in Punjab and students from diverse backgrounds and cultures take admission in the college to pursue their degree. This college is selected as a non – probable sample for all public sector undergraduate college students.

The sample are the BS4YDP students of semester 4, from disciplines of Science, Social Sciences and languages in Government Islamia Graduate College for Women Cooper Road Lahore. The sample is further divided into the experimental group and the controlled group.

Sampling techniques

The sampling techniques for this research, focused on Government Islamia Graduate College for Women Cooper Road Lahore which is an affiliated college to Lahore College for Women University. The sample will consist of 6 disciplines covering science, social science, and language, with a controlled group of 300 students and 4 disciplines of the same sub groups in an experimental group of 110 students. To ensure the representativeness and reliability of the study, a combination of non-probabilistic and probabilistic sampling techniques is employed.

Procedure of the Study

This Action research will employ an experimental design to collect scientific and statistical data and day wise teachers' Journal to collect qualitative data.

The *first step* is the collection of data using a Survey Questionnaire to check student's background knowledge about attempting English comprehension tasks, their personal assumption about their level of understanding in English Comprehension and understanding of applying Metacognitive techniques while attempting English comprehension academic tasks. The students will fill a questionnaire based on Likert scale. The data will be presented in the form of Bar graphs and statistical data.

The *second step* involves a pretest conducted from a text (Section- III Essays) selected from BS4YDP semester 4 English compulsory text book (Eng-506. Exploring Literature) advised by Lahore college for women university. The results of the controlled group and the experimental group will be compared by applying statistical T- tests and represented in the form of the bar charts as graphs as well.

The *third step* is the teaching of the Essays in all disciplines. The Controlled group comprising six disciplines and 300 students will be taught with traditional teaching methods whereas the Experimental group comprising 4 disciplines and 110 students will be taught using metacognitive strategies.

A *posttest* will be conducted after the completion of teaching all essays for reading comprehension. The students' performance of both groups will be marked and compared. The performance of both groups in pretest and posttest will also be compared. The comparison of the results will be presented after applying statistical T- test and analyzed. The results will also be presented in the form of Bar graphs to have a clearer understanding.

Research Tools

The research tools employed are Questionnaire, Pretest, Posttest and Teachers' Journal. A *Questionnaire* is adapted following the SORS model to check the background knowledge of the students. The SORS is a modified version of the Metacognitive Awareness of Reading Strategies Inventory (MARSI) 9 created by K. Mokhtari and C. Reichard (2002) and was designed for adolescent and adult readers as a way for them to self-report their metacognitive awareness and perceived strategy use while reading textbooks and other school related materials.

A *Pretest and Posttest* is conducted before and after the experiment to collect data and results in order to validate the hypothesis.

Two *Teachers' journals*, one that of the researcher and the other of a colleague from the same department is kept as a reflective practice to collect qualitative data.

Teaching Methodology (Controlled group/ Experimental group)

The *Controlled Group* is exposed to the traditional method of teaching comprehension in the

classroom and each teacher's approach differs slightly from the other. Most teachers following a traditional approach translate the text for the students in the native language. The other prefers to translate and provide answers to the student's queries as well answers to any probable question that may come in the exam.

The *Experimental Group* is taught employing Metacognitive techniques. It is a collaborative experiment in which one other teacher participated with the researcher to apply the metacognitive techniques while teaching the reading comprehension text. This approach focuses on helping students develop awareness of their own thinking processes and strategies, in order to improve their reading comprehension skills.

Metacognitive teaching involves guiding students to think about how they approach reading tasks, such as setting goals, monitoring their understanding, and evaluating their comprehension. By encouraging students to reflect on their reading strategies and adjust them as needed, teachers helped students become more effective readers.

Metacognitive strategies

1. Self-questioning

- i. According to Pressley and Afflerbach (1995), self-questioning helps readers to focus their attention on key points in the text, make connections between different parts of the text, and clarify any confusion they may have.
- ii. A. Identifying topic sentence
- iii. Describing supporting details
- iv. Giving title to the paragraph

2. Summarisation

According to Hidi and Anderson (1986), summarization helps readers to extract the essential meaning from a text, enhance their memory of the material, and improve their overall comprehension.

3. Monitoring

According to Paris and Winograd (1990), monitoring comprehension helps readers to recognize when they are not understanding the text, identify areas of confusion, and employ strategies to overcome comprehension difficulties.

- a) Identifying part of speech
- b) Identifying transition words
- c) Infer
- d) Ask for support

Questionnaire Pilot Test

A pilot test of the questionnaire is conducted on a small sample of 10 participants to identify any potential issues with the wording or structure of the questions. It helped to ensure that the questionnaire is clear, easy to understand, and relevant to the research objectives.

Data Analysis

Data analysis is both quantitative and qualitative.

Reliability of the Qualitative and Quantitative data

The reliability of the data is ensured using triangulation i.e. two tools are used to collect quantitative data and one is to gather qualitative data from the research. Triangulation is a powerful methodological approach in educational research that involves the use of multiple data sources, methods, and perspectives to investigate a research problem (Denzin, 1978). This approach is particularly valuable in the field of education, where the complexity of the learning environment and the diversity of stakeholders often require a multifaceted understanding of the phenomena under study. Triangulation enhance the validity and reliability of the findings (Creswell, 2014). This approach helps to mitigate the limitations of individual data sources and reduces the risks of bias or systematic errors (Patton, 2015). Moreover, triangulation allows

researchers to explore different perspectives on the research problem, which is particularly important in educational settings where multiple stakeholders, including students, teachers, administrators, and policymakers, may have diverse experiences and viewpoints (Stake, 2010).

In a study on the implementation of a new curriculum in a secondary school, for example, the researchers could employ triangulation by conducting classroom observations, interviewing teachers and students, and analyzing relevant policy documents (Merriam & Tisdell, 2016). Triangulation in educational research also contributes to the development of more authentic theoretical frameworks and conceptual models (Denzin & Lincoln, 2011).

RESULT AND ANALYSIS

Data Analysis of Survey Questionnaire

The survey questionnaire is divided into three portions. First section comprised of six questions takes responses about students' awareness of their ability to comprehend L2, the second section has five questions which will help find out the measures taken by the students to comprehend the unfamiliarity in the text they experience, while attempting a reading comprehension task and the third portion in seven questions find answers to the difficulties which students might face while attempting English reading comprehension task. The answers are collected using Likert scale. The complete student sample of both the experimental and the controlled group filled the Questionnaire. The data of responses is entered on SPSS and percentage of each question is noted. The data of both groups is depicted separately in form of tables and bar charts. The tables show the data in numerals and present students' response percentage on the subject. Bar charts are added to give the pictorial view of the data which will make it easier for even the non-expert. The analysis of each section is done at the end of the tables and bar charts of each section.

Students' ability to comprehend L2

The analysis of the data shows that most frequent response in both groups is, "Neutral". The students are not sure about their understanding of English text. They central tendency remained the inability to be comprehend their performance in reading strategies such as identifying main ideas, inference of meaning, summarization and analysis of the text.

Measures to comprehend L2

The frequent responses in both group is either "Agree or Neutral". The central tendency is students' perception and belief that they apply some strategies to solve problems faced during reading comprehension. The finding does not later justify the results of pretest in both groups in which students did not score well in the complex and high-level question which required analysis and inference

Difficulties faced in L2 reading comprehension

The students in experimental and controlled group showed similar frequent responses in this section. Students find vocabulary, long sentences and complex sentence structure as the main hindrance. The central tendency is that students perceive their draw backs but are not sure how to address them. In section number (1) and (2) the students most frequent answers revolve around their claim of using some strategies to overcome difficulties. This shows that they are not aware that how they can utilize these strategies to attempt answers. Moreover, section (1) data and central tendency of students being Neutral suggests that they are not confident about their comprehension abilities.

Data Analysis Pretest, Posttest

Pretest, Posttest is the second tool developed to test the role of metacognitive techniques in teaching reading comprehension to undergraduate students. The same pretest and posttest were applied to the experimental group and the controlled group. After the marking, data of marks in

each question was entered in SPSS to check mean values and deviation in the results. T Test is applied on the data to get statistical values showing difference between the scores in each question of the experimental and controlled group. The data also presents difference in the tests' total scores between the experimental and the controlled group. The data is presented in the form of tables and bar charts. Where tables present the results in statistical values the bar chart makes it easy for even the non-expert to understand the differences in result. The analysis is presented after each question and its table and bar chart.

Results Paired T-Test for Pre-Test Total Marks and Post-Test Total Marks of Experimental and Controlled Group

Table.1 Paired Samples Statistics

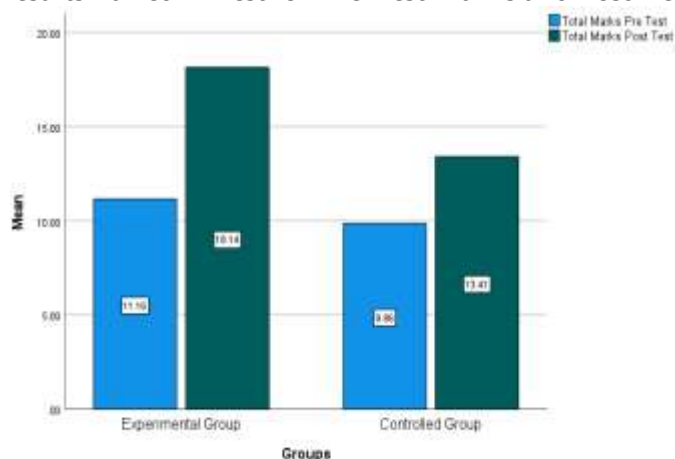
Groups			Mean		Std. Deviation	Std. Error Mean
Experimental Group	Pair 1	Total Marks Pre-Test	11.1600	100	2.86646	.28665
		Total Marks Post-Test	18.1400	100	2.79256	.27926
Controlled Group	Pair 1	Total Marks Pre-Test	9.8583	300	2.91933	.16855
		Total Marks Post-Test	13.4133	300	4.01117	.23158

Table 1 reports the summary statistics of both groups' pre-test and post-test total marks for all 5 questions. In the experimental group, the mean and standard deviation of pre-test and post-test total marks for all 5 questions are (Mean=11.16,18.14 and SD=2.87,2.79). In the controlled group, the mean and standard deviation of pre-test and post-test total marks for all 5 questions are (Mean=9.86,13.41 and SD=2.92,4.01).

Table. 2 Paired Samples Test

Groups			Paired Differences					T	df	Sig. (2-tailed)
			Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
						Lower	Upper			
Experimental Group	Pair1	TotalMarksPreTest TotalMarksPostTest	-6.98000	3.53905	.35390	-7.68222	-6.27778	-19.723	99	.000
Controlled Group	Pair1	TotalMarksPre-Test TotalMarksPostTest	-3.55500	4.90234	.28304	-4.11200	-2.99800	-12.560	299	.000

The above table describes the paired t-test. The t statistic (t) is -19.723, and the p-value (Sig. (2-tailed)) is 0.000 (p-value<0.05). Therefore, we may reject the null hypothesis (that there was no difference between the means of the pre-test and post-test total marks for all 5 questions in the experimental group) and conclude that there is strong evidence of a difference in the means of the pre-test and post-test total marks for all 5 questions in the experimental group that the teaching intervention improves marks. Similarly, the t statistic (t) is -12.560, and the p-value (Sig. (2-tailed)) is 0.000 (p-value<0.05). Therefore, we may reject the null hypothesis (that there was no difference between the means of the pre-test and post-test total marks for all 5 questions in the controlled group) and conclude that there is strong evidence of a difference in the means of the pre-test and post-test total marks for all 5 questions in the controlled group.

Results Paired T-Test for Pre-Test Marks and Post-Test Marks of Experimental and Controlled Group**Analysis of total marks pretest, posttest**

The statistical test and the bar charts depict that there is a significant difference between the total marks of experimental and the controlled group. The experimental group improved significantly in the reading comprehension. The improvement is evident in the controlled group as well but the difference is not significant.

Teachers' Journal Analysis

A study by Clandinin and Connelly (2000) highlighted that teacher journals can be the source of reflection for the teachers as details may help to understand the linguistic, cultural contexts present in the classroom and how the pedagogical effects each student. In a study conducted by Loughran (2002), the author emphasized that teacher journals may unveil pedagogical themes that can be addressed deeply and facilitate to overcome the challenges and issues which arise in the language classroom. According to a research study by Akar and Yılmaz (2014), educators who keep journals reported to be more aware of the outcomes of their study, the emotions involved and their professional growth, as it is a personal record of experiences, reflections, and observations made by the teacher as they engage in teaching and research.

Rubric Overview**Researcher (Teacher A)**

No,	Findings	High Evidence	Moderate Evidence	Low Evidence
1.	Identification of Metacognitive Strategies	Regularly used		
2.	Reflection on Effectiveness	Constant feedback		
3	Adaptation of Strategies	Seamlessly integrates		
4.	Engagement with Students	Actively involves		
5.	Evaluating Post-Reading			Only in posttest
6.	Collaborative Learning:	Actively involves		
7.	Scaffolding Instruction	Regular instructions		

Researcher (Teacher B)

No,	Findings	High Evidence	Moderate Evidence	Low Evidence
1.	Identification of Metacognitive Strategies	Regularly used		
2.	Reflection on Effectiveness	weekly		
3	Adaptation of Strategies	Successful integration		
4.	Engagement with Students	Actively involves		
5.	Evaluating Post-Reading		Occasionally evaluates	
6.	Collaborative Learning:	Actively involves		
7.	Scaffolding Instruction:	Regular instructions		

DISCUSSION, SUMMARY, CONCLUSION AND RECOMMENDATIONS

The educational research on the role of metacognitive techniques in teaching reading comprehension to undergraduate students, at the end will reflect on the significant findings that emerged after the experiment, involving 410 undergraduate students of a public sector college. This study aimed to map out in detail the differences in students' performance in English reading comprehension between the two groups after being exposed to two different methods of teaching. The controlled group which received traditional instruction, and an experimental group that was exposed to planned metacognitive strategies.

The research was set in pragmatic paradigm to support its experimental design and mixed method approach which encompassed both qualitative and quantitative data. It was a collaborative action research in which the researchers' colleague Ms Saba Tabassum collaborated to apply the metacognitive techniques in her class.

The techniques were applied over the course of three weeks. The background check survey questionnaire, paved the way to validate the application of the teaching experiment. The same pretest, posttest was applied on the experimental and the controlled group. The statistical data collected on SPSS, was treated with T Test and mean, standard deviation and intervals calculated to verify the differences in scores between the groups. Marks in individual questions and total marks obtained were compared to find out the overall performance difference between the groups and performance in individual segment set according to low to high order questions. Teachers' journal was kept over the duration of three weeks to reflect on real life situations experienced in the experimental group.

Discussion

The data collected was analyzed and results compiled to reject the null hypothesis and validate the hypothesis set at the beginning of the experiment.

Background check survey questionnaire

The survey applied on the complete student sample exhibited similar results. The most frequent responses percentage in the survey confirmed that students of both the experimental group and the controlled group, are unaware of any strategy that they may apply to navigate the English comprehension passage. The students were aware of techniques in isolation and as grammatical units but not as, tools to facilitate learning or assessments.

Pretest, post

The same pretest was applied on the experimental and the controlled group and the mean values indicated very slight differences if any, in the students' performance in all questions varying from lower order questions to high order

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questions. After, the experiment applied on the experimental group and controlled group being taught with traditional teaching methods a posttest was conducted. The performance data indicated that the experimental group scored significantly high in individual questions as well as in total marks. The experimental group data exhibited marked improvement in the students' reading comprehension abilities. The statistical analysis applied, specifically the t-tests, validated the considerable differences in performance between the two groups. Thus, it validates the role of metacognitive strategies in enhancing students' reading comprehension.

Teachers' journals

The qualitative data gathered in the form of teacher's journals was validated using a rubric developed by the researcher. The rubric was developed after analyzing, findings and themes present in previous researches done on metacognitive activities in different scenarios. Muhid, A., et.al. (2020) have discussed the themes such as implementation, adaptation directly linked to the achievement in reading comprehension achievement. Similarly, other themes such as collaboration, peer involvement, reflection and regulation are constant in latest studies (Williams, J. P., & Atkins, J. G.2009). The use of assessments and feedback in teaching reading comprehension in the form of reflective journals especially by the educators are an effective tool to collect qualitative data for continuous improvement (D. J. Hacker, J. Dunlosky, & A. C. Graesser p. 38-56). Another study (Jacobi, C., & Patterson, J. 2019) discusses the educational themes such as, enhancing reading through metacognitive strategies, engagement with students, adaptation and scaffolding. Yuko Iwai (2021) has developed a rubric discussing qualitative themes in the teacher/ student journal to get first-hand knowledge about the research based on real life situations.

The insights drawn from the qualitative aspect of this study, related with the quantitative findings. The journals revealed that the students in the experimental group demonstrated improved comprehension scores. They also engaged actively in their learning processes and showed significant awareness of the reading strategies. This resulted in a more reflective approach to comprehension that can be utilized by the teachers in lifelong learning.

Discussion on Research Questions

Can students perceive their ability to comprehend and difficulties faced while attempting a reading comprehension task?

Deriving from the quantitative data collected from the background check survey questionnaire it was cleared that the students are perception about their ability could be misleading for both the teachers and the students themselves. The frequent responses indicates that students were aware of their weaknesses and the difficulties they face while attempting a reading comprehension task but they were unaware of the techniques that they may use to navigate the task. The data validated the need for the experiment and the hypothesis, that, Teachers do not typically teach metacognitive reading strategies to college students to increase reading comprehension (Dole, Duffy, Roehler, & Pearson, 1991; Grubb et al., 2011, 2013). And, The Pakistan public sector education system has been experiencing a dire literacy situation and that researchers (AIR, 2006; Hock & Deshler, 2003; Kamil, 2003; Mason, 2013) have advised that teaching practices like metacognitive reading comprehension strategies may improve it to some degree. The students in public sector colleges lack in reading comprehension that significantly affect their performance in English language tasks thus, results in low performance, according to Falk-Ross (2001-2002), the undergraduate college students enter college with limited to none reading comprehension strategies. College courses demands independent reading of complex texts (Pugh et al., 2000) as well as completing comprehensive assignments such as answering questions and writing summaries (Taraban, Kerr, & Rynearson, 2004). Such tasks compel college students need to know how to monitor and to control their thinking and learning through metacognitive reading strategies (Baker & Brown, 1984; Brown, 1985; Cross & Paris, 1988; Flavell, Friedrichs, & Hoyt, 1970; Mokhtari, Sheorey, & Reichard, 2008; Wichadee, 2011).

How teaching metacognitive reading strategies improve reading comprehension in ESL undergraduate students?

The results compiled after the pretest and posttest proved that metacognitive activities play a vital role in teaching reading comprehension by improving students' overall performance. Thus, it proved the hypothesis based on previous researches that, Metacognitive reading strategies are effective in increasing the reading comprehension of struggling readers (Eilers & Pinkley, 2006; Falk-Ross, 2001-2002; Mealey & Nist, 1989; Nash-Ditzel, 2010; Nist & Holschuh, 2000; Pressley & Afflerbach, 1995; Wichadee, 2011).

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What similarities and differences exist between the scores of experimental and controlled groups in reading comprehension?

The results indicate that there was little or no difference in the scores of the controlled and experimental groups in the pretest but, a significant shift was observed in the posttest where the experimental group performed extensively high. The data also indicated that the difference in the marks of pretest, posttest between the two groups lies, mainly in the last two questions which were high order questions according to comprehension levels. The comprehension skills tested in the last three questions were, inference, analysis and self-reflection. The first two questions demanded literal answers which were comparatively easy to find out and are low order questions in reading comprehension. The scores in the first two questions in both groups were almost the same showing that the traditional methods do not equip students to answer high order comprehension questions. The experimental group out-performed in the high order questions, consequently scoring more marks.

Conclusion

This research aimed to extend its wings beyond educational theory. It endeavors to offer substantial contributions in teaching practices followed in public sector colleges especially in English reading comprehension. The results may encourage practitioners to integrate metacognitive activities into their curricula to encourage critical thinking and self-regulation among learners. This practice will equip the students with the tools necessary for academic success. The research has many limitations and contextual factors that can be taken as gap to explore in the further studies. The techniques can be studied in the same setting but in the different context of, humanities and science subjects, gender and low scoring- high scoring students.

Recommendations

To improve the quality of English language education in Pakistan's public sector colleges, several steps can be taken:

1. There is a need to invest in the professional development of English language teachers.
2. Training programs and workshops should be organized to help teachers enhance their teaching skills.
3. The curriculum for English language education in public sector colleges should focus on developing students' communication skills, critical thinking, and creativity.
4. It is suggested that teachers may document their pedagogical practices regularly to adjust their teaching methods.

In sum, this conclusive reflection endorses the transformative potential of metacognitive techniques within educational paradigms. These techniques can be implemented as an integral component of effective collaborated teaching that can prepare the students who are more informed and autonomous.

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