

Research Article

**Multiple Intelligences based Instruction and Perceived Reading Skills: an Experimental Analysis**

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**Abstract**

Instruction based on Multiple Intelligences could be the key to unlocking human resource potential. The study's goal is to determine whether "teaching reading skills through Multiple Intelligence-based Instruction (MIBI) for the K12 graders" affects students' academic achievement. In this study, the pretest-posttest nonequivalent groups design was used. This study included 60 randomly selected students, 30 in the experimental group and 30 in the control group. TerraNova and IOWA achievement tests were used in this study to determine students' reading comprehension achievement. A twenty-four-week study was conducted in this case. The SPSS 22 study was conducted by researchers, who analyzed and interpreted the data from the application. Researchers found that students who learned reading comprehension through MIBI performed better than those who learned it through traditional methods.

**Keywords:** Multiple Intelligences-Based Instruction, Achievement Scores, Reading Comprehension.

**INTRODUCTION**

Learning-centered instruction was introduced in the 1960s, as a result of the "humanism" movement, replacing teacher-centered instruction. With this concept, the educational system was transformed. Beginning in the 1990s, teachers began to consider the emotional state of learners in the learning process (Suhana, 2017). Researchers and policymakers around the world have also endorsed active-learning and student-centered pedagogies (Sebastian, 2020). In the classroom, teachers, according to Obianuju et al., (2015), must create learning environments that are centered on the student. Accordingly (cited in Shabiralyani, 2015), the new perspective on education requires instructors to take individual differences and learning styles of their students into account when developing instruction methods. She published a book on the same subject in 2017. APA's Task Force on Psychology in Education was created as a result of these efforts. Learning-Centered Psychological Principles: Guidelines for Educational Institution Redesign and Reform was the result of this task force's work. As M. Suhana explains, the MI theory can be used to create a

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successful educational institution (2017, p. 18). There are some striking similarities between the MI theory and those of the APA. With student collaboration, create learner-centered classrooms that are goal-oriented and active (Gardner, 2006). Multiple intelligence theory is recommended by the American Psychological Association for inclusion in school curricula. The MI, on the other hand, provided teachers with a philosophical framework that helped them make sense of the vast array of individual differences they encounter in their classrooms on a daily basis. There should be a structure to lesson plans and activities that takes into account student differences and needs. Educators consider MI theory to be "powerful medicine" according to Punia & Jyoti (2016). Regardless of the teaching approach, method, or strategy, they all agreed that instructions must be tailored to the students' multiple intelligences. The theory of multiple intelligences (MI) has been widely adopted by educators due to its positive outcomes. Multiple intelligence theory adoption is one of many reasons why student performance in educational institutions has improved, according to Burns (2017). (as cited in Suhana, 2004). Based on standardized test results, Bas, G., and Beyhan, O. (2016) concluded that educational institutions performed at or above average from a socioeconomic perspective.

In their study, Allen et al. (2017) found that MIBI improved reading achievement. In Pakistani educational institutions, no empirical study has been conducted on the effectiveness of MI theory on reading achievement tests, according to a literature review conducted around the world over the past thirty years. There are also reports from the MI survey of Pakistani teachers who teach a variety of subjects in community-based educational institutions (Muhammad R. & Asad A., 2016), Adisendjaja et al., (2019), and Abosalem (2016), and (UNESCO, 2019). According to Abosalem, students' achievement has yet to be determined (2016). To the best of Allen et al.'s knowledge, Pakistan's education system is still based on the traditional model, in which students are completely dependent on their teachers (2019). The traditional classroom, according to Allen et al., is filled with negative and destructive suggestions that impede learning (2017). In order to replace these negative suggestions with constructive ones, one must create a non-threatening learning environment.

Comparatively to other countries in the region, Pakistan's students are perceived to perform poorly in reading comprehension. UNESCO's Muhammad & Asad report (UNESCO, 2019) shows that only 26.8% of Pakistani children can read with comprehension, and that 63.7 percent of them can read without comprehension. The situation is even worse in state-run educational institutions. Educational institutions must cater to the different intelligences of learners in order to improve their reading comprehension, according to several studies (Abdi et al., 2013; Adisendjaja et al. It was found that in higher grades, the emphasis is placed solely on verbal-linguistic and logical intelligence instead of developing multiple intelligences among students by Muhammad and Asad (UNESCO, 2019). There are more than eight intelligences, according to Gardner (1983). 9 intelligences are claimed in this pluralistic view. In addition to verbal-linguistic and logical-mathematical intelligence (these two being dominant), there is also visual-spatial intelligence, bodily-kinesthetic intelligence, musical intelligence (artistic intelligence), interpersonal intelligence, intrapersonal intelligence, and naturalistic intelligence. Due to its recognition of everyone's talents and contributions, MI has transformed the traditional view of intelligence. There are a number of other individuals who have been recognized by MI (Ayub et al., 2021). In addition to their strong intelligences, these individuals use a specific set of strong intelligences every day. Using languages, students can pass on cultural assets.

More than 80% of students cannot understand a simple MIBI paragraph in English (Muhammad & Asad, 2019). Students in middle-level educational institutions also have difficulty understanding

and comprehending the text, reading critically, and summarizing it. As a result of slow reading speed and poor information processing, low achievement scores were achieved. Study after study has shown that reading is more than just pronouncing the words on the page. Words that are transformed into meaningful thoughts in your cognition must be decipherable (Campbell, 1999). As a result, reading comprehension relies on understanding the content of what you're reading. If we're talking about reading skills, they're the same for all disciplines. Students must be able to interpret the text when they are engaged in reading it (Fauth et al., 2019). Children's education is always built on the foundation of reading (Gul, R., & Reba, A., 2017). Most educators agreed that students were able to read and understand the text they encountered. They also learn more about the concepts presented in the content. Students' exam performance appears to be affected by reading inefficiency (Gul, R., et al., 2021). Researchers are increasingly in agreement that teachers must demonstrate systematic and well-informed teaching skills in order to maximize the interests and reading comprehension of their students. Instead of passively absorbing information, reading requires a stimulating environment (Gul, R., et al., 2020). They found that Pakistani teachers did not teach reading comprehension or how to scan texts. Students' anxiety during communicative output is a concern for many educators who are looking for ways to increase receptive input and decrease anxiety (Gul, R., & Khilji, G., 2021). It turns students from passive recipients of information into active learners through MI instruction. Moreover, M.I. aids in the development of all intelligences necessary for success in life, despite the fact that they are lacking in the person. These teachers can help students who struggle with reading comprehension by allowing them to learn at their own pace and with their own interests, by giving them positive reinforcement, and by helping them achieve their full potential. The fact that MIBI can enhance active learning and help students reach their full potential and improve their reading comprehension is one of the reasons why it is so popular.

### **Aim of the Study**

Students in grades K-12 will take the TerraNova and IOWA achievement tests to determine the effects of Multiple Intelligence-Based Instruction (MIBI). Here, the study's goal was achieved by examining the following research questions. Using MIBI, Pakistani K12 students were tested to see if their reading comprehension improved over time. Gender and reading comprehension were examined in this study as well.

### **Research Questions**

What is the difference between the reading comprehension achievement of the two groups of K12 graders, using Instruction based on Multiple Intelligences and the current traditional teaching methods?

If, there a variance exists between the reading achievements of both groups, how long this persists among these students?

### **Method**

#### *Research Design*

Among the experimental models used in this research study was the pre-test, post-test control group model. In the experimental model, comparisons were made. Therefore, the experimental and control groups were compared in terms of the results of the pre- and post-tests. The study's pre-testing allowed researchers to determine that the study groups were at similar levels before MIBI

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was applied, and to compare post-test results accordingly (Allen, 2017). For the experiment, two groups and three-dimensional occasions were used (T1, T2, T3; Refer Table 3). Teachers and students in the experimental group completed the first part of the study after 12 weeks of working with MIBI instead of their usual reading comprehension instruction program. Traditional methods of reading comprehension were used by a control group. T2 and T3 treatments were alternated during the second twelve-week phase. Reading comprehension returned to control group as MIBI was implemented again in the experimental group. Using a delayed posttest, researchers were able to determine the reading comprehension levels of students in both experimental and control groups. They are switched on and off in both groups at different times. In this way, the treatment's internal validity can be tested, which is a more ethical approach. Neither group's characteristics will have a greater impact than the other because the content and related materials must be equally effective in both groups. Both groups may have different results, which could compromise the validity of the methods. Researchers found that the treatment was both reproducible and generalizable in an experimental group of students.

*Sample*

The study group of the study consists of 60 Grade K12 students from two colleges in Sindh province of Pakistan in 2020-2021 academic year sessions. The characteristics of the students constituting the study group are shown in Table 1.

Table 1.

*Distributions Related to Study Groups*

Study Groups	Gender				Total
	Boys		Girls		
	<i>N</i>	%	<i>n</i>	%	
Experimental Group	14	47%	16	53%	
Control Group	15	50%	15	50%	

As can be seen in Table 1, a total of 60 students participated in this study, 30 of whom were in the control group and the other 30 were in the experimental group. Reading and writing skills are taught in the classroom because the study group is an educational institution at the K-12 level. This group of students was included in the study because it was believed that their level of proficiency would not interfere with obtaining reliable results. Student responses to pre- and post-test applications were analyzed to determine whether or not they were reliable. The table below provides information on the groups that are the subject of research.

Table 2.

*Control and Experimental Group Pretest Scores Independent Groups t Test*

Groups	$\bar{X}$	<i>N</i>	<i>Ss</i>	<i>SD</i>	<i>T</i>	<i>p</i>
Pretest Control	8.98	30	3.08	67	-2.043	.321
Experiment	8.58	30	3.01			

Table 2 shows that the average pretest score for the control group is 8.98, while the average pretest score for the experimental group is only 8.58. It's easy to tell that results are close when we look at their average. *p* is .321 in the table. Analyses revealed that the average scores for both groups were not statistically significant at 0.05 level. There is no significant difference between groups based on pre-test scores. Using an experimental design, this study was carried out. No equivalent groups are used in the study's pretest and posttest. Comparison groups are assigned at random and all comparison groups must participate in a pretest and posttest in addition to manipulating the independent variable. Educational research was conducted using a quantitative approach (Bicer, N., 2017; Carter, N. G., 2015; Cherry, K., 2019). Randomized samples are best for determining if

any particular factor has influenced the outcome. Two groups are selected for the pretest-posttest nonequivalent groups design, as is the case in most educational research (Jimenez, E. C., 2020; Zakir, S., & Javed, T., 2021). Two groups of girls and boys in grades K-12 were selected for the intervention. Study was conducted in Pakistan's largest city of Karachi during the academic year of 2020-2021. Using the Cluster Random Sampling method, participants were selected from a defined population. It was more practical and convenient to select individuals from a defined population (Zakir, S., & Javed, T., 2021). For this study, all students in grades K-12 were selected at random. Sixty students in two classes from grades k through 12 participated in this research study. Each group had 30 students.

#### *Description of Variables*

These two methods of instruction, Multiple Intelligence-Based Instruction (MIBI) and traditional, are unrelated and independent variable of the study. Dependent Variables in this case were TerraNova and IOWA Achievement test scores of K12 graders. A number of variables, including teacher time, content material, socioeconomic status, and classroom conditions, were under constant observation.

### **Instruments**

#### ***TerraNova Test***

As part of TerraNova, students in grades K-12 are assessed on their progress in various subjects such as reading, language arts, mathematics, science, social studies and vocabulary and spelling. TerraNova is a series of standardized achievement tests. It was published by McGraw-Hill. "key assets" have been agreed to be purchased by Data Recognition Corporation (DRC) from CTB/McGraw-Hill Assessment, according to an announcement made by McGraw-Hill Education on June 30, 2015. TerraNova was created in 1996 when the California Achievement Tests and the California Tests of Basic Skills were updated (Suhana, 2020).

#### ***The IOWA Test***

These tests measure students' reading, language, math, social studies, and science skills. They are administered to students in grades 3 through 8. As a result of the tests, foundational skills and higher-order thinking abilities are assessed. Comparisons are made at the national and local levels in the IOWA Assessments. Designers of this test set out to improve student instruction in 1935 when they created it and administered it for the first time.

Pretest and posttest of reading comprehension are given to both groups in order to measure their progress. It is a requirement of the National Curriculum (2019) that students achieve their educational goals. During peer review, the test was evaluated by a university professor, an educator, and a language teaching expert. The review process incorporates their comments and suggestions to ensure the content's validity. When adapting these tools, construct validity is also ensured by referring to the researcher's goals (Jimenez, E. C., 2020).

### **Instructing Reading Skills**

#### ***Comparing Instruction Styles***

Between the students enrolled in the treatment program and those enrolled in traditional reading comprehension instruction institutions, a comparison was made between their reading comprehension skills and those of their peers. Reading comprehension is taught in Pakistani institutions as part of the English curriculum (Ayub et al., 2021). Pakistan's inspectorate of education found that only 15 minutes of the weekly three-hour English lesson is devoted to reading comprehension (Samiullah, 2020). Most reading comprehension lessons are centered around

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products, such as books or magazines. Students are not taught how to approach reading comprehension assignments during the reading process. They are not monitored or evaluated by most institutions, just as they are not monitored or evaluated by most students. To determine how reading is taught in college. 91% of teachers surveyed by Ayub and colleagues in 2019 said they spend less than an hour a week teaching reading to students.

Table 3

*Research Design*

Pretest Group	Phase 1 (12 weeks) (T1)	Posttest (T2)	Phase 2 (12 weeks) (T3)	Delayed posttest
1	Assignments MIBI treatment	Assignments Traditional reading instruction	Assignments MIBI treatment	Assignments Traditional reading instruction
2	i, ii, iii Traditional instruction	iv, v, vi Traditional reading instruction	MIBI treatment	vii, viii, ix Traditional reading instruction

*Implementing the MIBI*

MIBI includes not only student portfolios, but also teacher guides (Sebastian, 2020). The experimental group's 72 lessons were divided into two 12-week phases with two lessons per week each. As a result, MIBI employs a wide range of research-based practices (Gul et al., 2021) and instructional approaches. How were reading strategies, text structure, and self-regulation skills incorporated into specific teaching and learning activities as part of the design? See Table 4.

Table 4

*Overview of the MIBI*

Design Principles		MIBI Treatment	
Focus of instruction	Mode of instruction	Learning activities	Teaching activities
Text Structures	(Guided) Practice	In real-world situations, apply the discussed criteria to various genres with clear communicative goals and intended audiences. After you have finished reading: Peer-review and self-assessment	Through scaffolding and product feedback, provide assistance as needed
	Observational learning	For a good text, compare and discuss model texts of a similar type before you begin reading. What are the criteria for various text types? What are the criteria for various text types? (Teacher or peer) discussing the criteria for various text types? After you have finished reading: Give feedback (reader reaction) on a peer's or your own text based on the previously discussed criteria.	Before starting to reading: The text type should be modeled in terms of its relevant aspects.  After you have finished reading: Students' texts should be evaluated based on the previously discussed criteria, and readers' reactions should be solicited.
	Explicit instruction	Take notes and pay attention to what you hear.	Why and how criteria and conventions should

			be used, with the help of model text
Self-regulation Skills	(Guided) Practice	The following steps should be taken before reading: establish a communicative goal, monitor progress towards this goal during the reading process, regulate one's own reading process and adapt if necessary, evaluate written product in relation to the communicative goal, and revise if necessary.	If needed, provide assistance by way of scaffolding and self-regulation feedback
	Observational learning	While reading, observe/discuss/compare (teacher or peer) a model(s) setting goals and assessing progress in relation to goals, and observe/discuss/compare (self-regulation's) influence.	Exhibit self-regulation while reading, by establishing and monitoring a goal for the piece.
	Explicit instruction	Take notes and pay attention to what you hear.	Why is it important to plan ahead and set communicative goals for reading? When and how can progress toward the communicative goal best be monitored during the reading process?
Reading Strategies	(Guided) Practice	Apply the steps of the approach to authentic reading Assignments in a range of genres with clear communicative purposes and intended audience	Scaffolding can be used to provide assistance as needed, and feedback can be processed.
	Observational learning	Analyze or compare a model (teacher or peer) to the reading strategy.	Demonstrate how to employ a method by thinking aloud while doing (part of) the reading activity.
	Explicit instruction	Remember relevant background information and take notes as you listen.	Use a reading strategy to educate students about its components, as well as its benefits, and to activate students' prior knowledge.

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Teachers were assessed on fidelity using a variety of measures. It was determined that three factors contributed to the degree of faithfulness: Measured are the completion rates of lessons by students and the adherence of teachers to lesson plans in the teacher's guide. Student portfolios and teacher reflection books were used to collect the metadata.

### *Teachers' reflection books*

In order to keep track of completed lessons, based on MIBI, and their duration, each teacher was required to keep a lesson reflection book. After the treatment period, approximately 75 percent of the reflection books were returned. According to the analysis of the data, teachers taught an average of 72 MIBI lessons. A typical lesson lasted 43 minutes, with lessons lasting anywhere from 25 to 59 minutes.

### *Observations during Interim*

While waiting for the lesson to begin, each observation lasted as long as the lesson itself. They differed slightly because each group's observations occurred over a two-week period. Experts who had been trained by undergraduate students served as observers in this study. Each class had only one participant, so observational data couldn't be verified. In accordance with Samiullah et al (2020) findings it was decided to collect two types of data using an observation instrument. We recorded the teacher's status every 20 seconds, whether he was on task or not. In each task, a total number of individuals and small groups of students participated. As well as leveling students, observers noted how often teachers used acronyms to describe reading comprehension strategies or steps. Teachers spent an average of 90% of the instructional time observed concentrating on their tasks. Their general framework and key elements were adhered to, MIBI reports. Determining how to divide group sessions (54 percent on average) and individual instruction was also done (46 percent). Leveling and use of text were also used by teachers to demonstrate reading comprehension strategies (on average, 1.3 and 1.4 times per lesson, respectively).

## **Reading comprehension Quality Assessment**

### *Reading comprehension assignments*

A variety of texts were used to test the students' reading comprehension abilities, as shown in Table 3. Using different texts on three separate occasions, we evaluated the students' reading comprehension skills. As many similarities as possible were required between the three assignments for each type. As part of this study, all nine reading comprehension assignments were developed by the authors in conjunction with other field experts. To ensure that the texts were manageable and that the difficulty and topical interest were appropriate, special care was taken to ensure that they were concise. This was achieved by providing them with a MIBI prompt, an image, and space to pre reading before beginning the task (if desired).

### *Reading comprehension assignments Administration*

In this study, teachers assigned reading comprehension assignments to students as part of their normal teaching routine. As a result, teachers were given a week to complete the three reading comprehension assignments. Each reading comprehension assignment was completed independently and without a time limit by the students. Teachers were instructed not to provide any additional assistance to students during the tests.

## **Analyzing the Data**

There was a cross-categorization of students and assignments in this study. Multilevel (cross-classified) analysis was used to analyze the data. This test was used to verify the validity of the experiment on a whole. Students in the Experimental Group were evaluated as part of a specific



contrast analysis to determine if the treatment had long-term maintenance effects on their reading comprehension abilities. This study compared students' posttest and delayed posttest scores. To determine if the treatment was equally effective across grade levels, two additional levels were created. There were two additional levels added to the original test for evaluating gender-related effects on treatment effectiveness. Male and female students' average scores were found to be different. Analyses of aptitude treatment interactions were conducted in order to test students with varying levels of reading comprehension proficiency. Pre- and post-test scores were compared in this analysis.

### Results

Listed below are the results of data analysis, as well as the three sub-problems that were the focus of the study. These sub-objectives guided the organization of the research findings under three different headings: In the research, there is a first sub-problem. Findings "Is there a meaningful difference between the pre-test and post-test average scores of students in the control and experimental groups?" For these conclusions, the pretest scores of experimental and control groups were compared.

Table 5.

Experimental Group Pre-Test- Post Test Dependent Groups T Test

	Score	$\bar{X}$	<i>N</i>	<i>S<sub>s</sub></i>	<i>SD</i>	<i>t</i>	<i>p</i>
Experimental Group	Pretest	8.58	30	3.56	30.77	-16.943	.000
	Posttest	16.984	30	4.91			

Its pretest score was 8.58, and its post-test score was 16.984, as shown in table 5. Results of the pre- and post-test for the experimental group were statistically different at the 0.05 level ( $p=.00000$ ). Following implementation of the Theory of Multiple Intelligence curriculum, the experimental group's pre- and post-test scores were significantly different, as shown in this table.

Table 6.

Control Group Pretest- and Posttest-Dependent Groups T Test

	Score	$\bar{X}$	<i>N</i>	<i>S<sub>s</sub></i>	<i>SD</i>	<i>t</i>	<i>p</i>
Control Group	Pretest	8.89	30	2.56	29.27	-8.043	.000
	Posttest	10.14	30	2.91			

As shown in Table 6, the average pre-test score for the control group was 8.89, while the average post-test score was 10.14. There was a significant difference between the pre-test and post-test averages of the control group ( $p =.001$ ). It was found that the traditional method of teaching geometric shapes had a significant impact on students' academic performance. As a second sub-problem of the research, the following is addressed: Students in the control and experimental groups had significantly different post-test point averages.

Table 7.

Experimental and Control Group Post Test Scores Independent Groups T Test

	Group	$\bar{X}$	<i>N</i>	<i>S<sub>s</sub></i>	<i>SD</i>	<i>t</i>	<i>p</i>
Pretest	Experimental	8.58	30	2.56	29.27	-5.043	.000
	Control	8.19	30	2.91			

As shown in Table 7, the average pre-test score for the control group is 8.19, while the average post-test score is 8.58. The control group's pre- and post-test averages showed a significant difference of 0.05 ( $p =.001$ ). It was found that the traditional method of teaching geometric shapes had a significant impact on students' academic performance. Finding is the second sub-problem of

the research. Findings relating to sub-problem 1 require that control and experimental groups have significantly different post-test point averages.

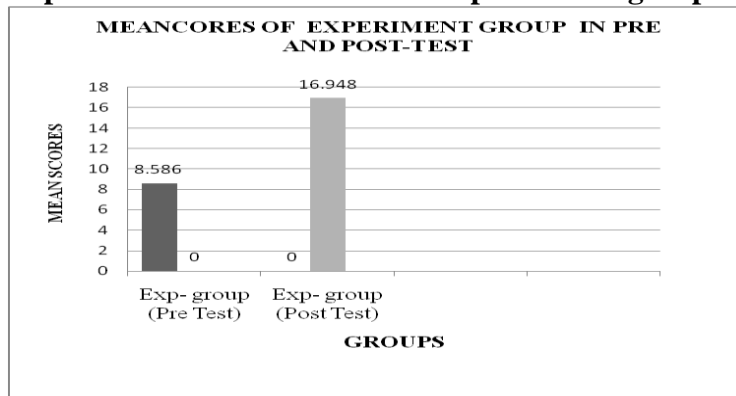
Table 8.

Experimental and Control Group Post Test Scores Independent Groups T Test

	Group	$\bar{X}$	$N$	$S_s$	$SD$	$t$	$p$
Posttest	Experimental	16.948	30	2.46	29.27	-8.043	.000
	Control	10.14	30	2.71			

The t test for independent groups was used to compare experimental and control groups. As a result of the post-test, the control group averaged 10.014, while the test group scored an average of 16.948. As a result, no statistically significant differences were found. This resulted in a significant difference in scores ( $p = .00000$ ). And the experimental group and the control group scored significantly higher than each other.

**FIGURE 1: Comparison between control and experimental groups after treatment.**



A result of this difference is a mean score of 10.14 for the control group (Fig. 1). In comparison to students who were taught using the Traditional Instructional Method, students who were taught using the Multiple Intelligences Instructional Method did better 16.948.

**DISCUSSION**

MIBI Reading Comprehension Instruction Program for Pakistani Students in Colleges of K12 Graders was evaluated in this study for effectiveness. As a result of their participation in the program, they were hired as teachers afterward. Their general education classes provided the treatment for a period of twelve weeks. Reading comprehension was significantly improved by MIBI, according to the results. Their reading comprehension improved over time, and their efforts became more focused. Only this treatment was found to be beneficial to the experimental group, as determined by their results. According to this data, after four months of instruction, the treatment's effects were still evident. However, the treatment had the same effect on both girls and boys alike. Other studies have found that students' reading comprehension abilities were unaffected by an aptitude treatment analysis. Despite its effectiveness, the treatment had a moderate effect size (ES) of 0.36 on reading comprehension in students. Despite the fact that this ES was calculated using the average number of lessons completed (60), the effect is overstated. ES increased from 0.36 to 0.58 among students who completed all 72 lessons. As a result of completing the entire program, students make greater progress. Compare the impact of the treatment on reading comprehension skills between grades K11 and K12 to get a more intuitive

interpretation. Reading comprehension quality improved by an average of 4.73 points in two months, according to a study by Gul et al., (2021). Students' reading comprehension skills improved by more than a half-grade level as a result. According to a study (Slof B. et al., 2016; Suhana, 2017), students have a hard time revising. Students must first be aware of their texts' goals and intended audience in order to successfully modify them. Additionally, they must be capable of critically analyzing their own writing and knowing how to deal with problems both locally and textually. Due to the course's focus on pre-reading comprehension, students should begin working with MIBI in Grade K11. From fifth to K12, students' reading comprehension skills do not improve much, according to Pakistan's Department of Education (Samiullah, 2020).

### ***Treatment Effects***

Since the program's start four months ago, the students' reading comprehension skills have improved significantly. There is some evidence to suggest that the treatment had a lasting effect on the patient. The students' reading comprehension scores did not improve after the treatment period. According to Zakir, S., & Javed, T., Pakistani students' reading comprehension does not improve significantly after regular reading comprehension lessons (2021). Students in the control group's reading comprehension did not improve between the first and second measurement occasions, compared to students in the experimental group. Maintenance effects are possible if assignment difficulty was similar for both groups and if treatment effects (the interaction between condition and time) were comparable. The same scoring procedure was used to calculate average scores based on three reading comprehension assignments per measurement occasion. If results change over time, it could be due to consequences (within conditions).

### ***Applicability of MIBI for Different Grades***

In the end, no evidence of an aptitude treatment interaction could be found as the result of the program. From this, both less-proficient and more-proficient students benefited. Encouragement comes from the fact that all students were served in general education classrooms. This program will benefit a minimum of three different types of students. In 2021, Ayub and colleagues report on their findings. MIBI's first goal was to reduce cognitive overload during the reading comprehension process by teaching students how to regulate their own reading comprehension processes. Despite the fact that MIBI finished third, it provided a variety of learning opportunities. The study, for example, included peer leveling of coping and mastery (Slof, B., et al., 2016; Suhana, M., 2017). MIBI is a good choice for upper secondary classrooms because of its ease of use. Despite that, we cannot claim that any of the program's components are effective. The most successful part of our strategy is also unknown. Students' reading comprehension skills can be improved by combining strategy-focused instruction with observational learning, according to previous research (Nayyereh Ghaznavi et al., 2021). Teaching by example and reflection, direct instruction, group instruction and small group instruction were all evaluated during the reading comprehension strategy training. Findings from the study show that leveling and reflection are directly related to all positive outcomes. According to Samiullah et al., the leveling of our program may have improved its effectiveness (2020). Each component's importance will require further research to determine its relative importance.

### **Conclusion**

Students' reading comprehension skills can be improved by using MIBI, according to a study. Researchers were able to replicate this effect in a single study and obtain similar results. The characteristics of the sample do not appear to affect the results of treatment.

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