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# Assessing the Effectiveness of Pair and Conventional Learning Strategies in Enhancing Academic Achievement at the Elementary Level

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**Abstract:** The purpose of the present investigation was to compare the relative efficiency of dyadic cooperative instructions with traditional instructions with regard to fostering academic performance among elementary pupils. The experimental group (n=30) was instructed with the help of pair learning, and the control group (n=30) was instructed with the help of conventional instruction. The quasi-experimental pretest-posttest control group design was applied. The measurement of academic performance was done through the standardized English-language test during the pre- and post-intervention periods. Statistical analysis was done using SPSS and involved descriptive statistics, paired and independent comparisons, and correlation. The findings revealed that the use of the traditional method in training only resulted in a weak level of improvement in the post-test scores, but this was not the case in the pair-learning condition, as it was statistically significant ($p < .001$). Another level of analysis comparing the results between the pair learning group and the conventional group indicated that the former obtained higher post-test scores than the latter group ($p < .001$). Altogether, these results reflect the conclusion that, even though the relative improvement in the traditional pedagogy was rather small, the pair-learning model offered much more valuable results in the academic performance. That study hence affirms the fact that pair learning is an instructional modality that is more efficient compared to traditional teaching in the elementary setting. According to cooperative learning and social constructivism, pair learning enhances elementary students' performance and encourages greater student interaction in the classroom setting.

**Keywords:** Pair Learning, Conventional Learning, Academic Achievement, Cooperative Learning, Elementary Education

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## Introduction

Extensive literature has demonstrated that pair learning is an effective pedagogical technique that encourages learner engagement, two-way interaction, and learning success. According to Social Learning Theory (Bandura, 1977) and the concept of collaborative learning, pair learning is a structured two-learner interaction in which learners collectively develop knowledge through the exchange of ideas and experiences. Such interaction fosters comprehension, greater motivation, and social development, particularly at such a young age as schooling.

Instructional techniques are important for student performance in the elementary school, where primary academic skills and attitudes toward learning are acquired. Empirical research indicates that peer-based and

collaborative learning activities (e.g., pair learning) can enhance learners' understanding, critical thinking, and engagement (Johnson & Johnson, 2020). The problem of pair learning requires students to be more active in studying curricular material and interacting with peers, thereby making learning more meaningful and more equitable.

Although these are the benefits, the legacy of pedagogical models characterized by teacher-centered instruction, didactic lectures, textbooks, and memorization remains the standard in elementary schools, especially in developing contexts. Although traditional teaching provides some structure and allows one to cover the entire curriculum (Rosenshine, 2020; Slavin, 2021), it can be restrictive with respect to student interaction and independent learning. Hence, the question of whether pair learning can be as effective as traditional instructional techniques in enhancing student performance remains open.

With the increasing level of interest towards student-centered pedagogies, there is a necessity to make empirical inquiries into the question of whether the advantages of pair learning are measurable as compared to traditional instructional practices in elementary schools.

## Statement of the Problem

Despite increasing attention on the enhancement of the quality of English teaching in the elementary school, in the majority of the classes, students are taught using methods of teacher-centered instruction, which allow the students minimal interaction and active learning. Despite the fact that pair learning has been proven as a promising instructional approach in enhancing the academic performance of learners, no empirical studies have been done to compare it with the conventional teaching methods at the elementary level, especially in Pakistan. This decontextuality discourages the teacher from learning incentives to apply instructional methods that are supported by evidence, so there is a necessity to conduct a systematic inquiry into the comparative effectiveness of pair learning as compared to conventional instruction on the educational benefit of the learners.

## Objectives of the Study

The objectives of this study were to:

1. Examine the effect of the pair learning method on students' academic achievement at the elementary level.
2. Examine the effect of the conventional learning method on students' academic achievement at the elementary level.
3. Compare students' academic achievement taught through pair learning and conventional learning methods.

## Research Hypotheses

**$H_1$:** There is a statistically significant effect of the pair learning method on students' academic achievement at the elementary level.

**$H_2$:** There is a statistically significant effect of the conventional learning method on students' academic achievement at the elementary level.

**$H_3$:** There is a statistically significant difference in academic achievement between students taught through the pair learning method and those taught through the conventional learning method.

## Literature Review

### Pair Learning as an Instructional Strategy

Pair learning is a systematic kind of peer-oriented teaching where two students are involved in acquiring knowledge in a collective way, thus sharing responsibility and engaging each other in a mutual way. In accordance with Social Learning Theory (Bandura, 1977) and social constructivist systems, the focus of the pair learning approach is on observational learning, dialogic exchange, and peer modeling. As opposed to larger-group learning, pair learning offers fair participation and steady input, and it is especially appropriate in the elementary school when the emphasis on the individual and active engagement are the primary issues.

Empirical evidence has continuously indicated that pair and collaborative learning strategies will positively impact academic performance, student motivation, and engagement. According to Johnson and Johnson (2009, 2020),

conceptual learning is encouraged by learning cooperative infrastructures, which also lessen the anxiety of learning and facilitate a good relationship with peers. It is also similar that Topping (2005) discovered that higher-order learning and cognitive development occur through peer-based instructional models that promote meaning negotiation and expression among learners.

The promotion of pair learning has also been linked to the idea of academic equity. Boud (1988) stated that reciprocal learning helped students with different levels of abilities to enjoy the benefit of mutual clarification and feedback. Research has indicated that students using a pair learning system not only exhibit better learning of the content but also show excellent problem-solving skills as compared to students who are taught using individualized teaching methods or passive delivery methods (Slavin, 1995).

## Conventional Learning and Teacher-Centered Instruction

The most common modes of pedagogical practice in elementary schools are commonly known as traditional education, and are also called teacher-centered learning. Its salient points are: lecture modes of presentation, reliance on textbook work, memorization, and teacher explanation. Basically, this pedagogic theory is founded on the behaviorist theory, according to which learning is a behavioral reaction conditioned by external stimuli and supported by the rehearsal of the behavior and feedback (Weeger, 2018).

The empirical research indicates that standard teaching techniques prove to be effective when it comes to keeping order in the classroom, guaranteeing proper coverage of the curricular material, and offering simple knowledge and required skills (Rosenshine, 2020; Slavin, 2021). Hattie (2019) also stressed that direct instruction can bring about positive learning results in case the lessons are properly ordered and well-presented. Nonetheless, this conventional process of instruction is perceived by the critics as one that usually does not allow students to interact, be creative, and enhance their skills to think on higher levels, especially in language learning.

In the elementary learning setting, the prevalence of teacher-centered instructions might inhibit the active practice and group learning, which are crucial to the development of communicative competence and learner independence. This has led to an increased desire for debate on the appropriateness of conventional pedagogical practices in meeting the heterogeneous needs of learning and enhancing long-term academic success.

## Pair Learning and Academic Achievement

Academic achievement is commonly described as the degree of accomplishment of learning objectives, which is usually measured through standardized and classroom tests (Steinmayr et al., 2014). Teaching strategies play a significant role in defining how the students perform academically, particularly during their early stages of schooling. Studies done on the peer-based learning strategies have revealed that pair learning is optimally effective in promoting academic performance in terms of interaction, self-control, and meaningful learning (Pintrich & De Groot, 1990).

Slavin (1995) stated that cooperative and peer-assisted learning techniques produced superior academic outcomes compared with traditional instructional techniques, particularly when assignments required the understanding and practice of knowledge and skills in addition to memorisation. Wentzel (1998) also noted that peer interaction introduces the effect of motivational influence and the sense of belonging, which subsequently results in academic success indirectly. These findings suggest that pair learning does not emphasize and improve the cognitive performance of learning but has an influence on the affective and social domains of learning.

## Research Gap

Even though there are significant data illustrating the experience of cooperative and peer-based learning strategies, most empirical research has been carried out in schools at the secondary or higher levels. Research on pair learning at the elementary level is minimal, particularly in the English lesson-based context, as well as in the locally based context, like in Pakistan. Moreover, there are limited papers that have employed experimental designs to directly compare the results of pair learning and traditional teaching in determining the academic success of students.

This literature gap suggests that there is a need to conduct systematic, context-specific studies that will establish the effectiveness of pair learning in elementary schools. On this basis, the proposed research will utilize the quasi-

experimental design to contrast the effectiveness of pair learning and conventional learning methods regarding the academic achievement of elementary learners.

## Methodology

### Nature of the Study

The research design used in this research was quantitative to establish the impact of pair-learning strategies on the academic achievement of elementary students.

Quantitative approaches allowed conducting results in a systematized form, having significant hypothesis testing, and conducting comparisons between intergroup differences in a statistically significant manner (Creswell, 2014; Gay et al., 2012).

Academic achievement and engagement measures were done by using standardized measures, and the effectiveness of pair learning was measured by pre-test and post-test differences in the experimental and control groups.

### Research Design

A quasi-experimental pretest/posttest equivalent-groups design was used. Two groups were selected.

**Table 1**

| Group | Pre-Test | Treatment | Post-Test |
|---|---|---|---|
| Experimental (Pair Learning) | $O_1$ | Pair Learning | $O_2$ |
| Control (Conventional Learning) | $O_3$ | Conventional Instruction | $O_4$ |

The experimental condition led the participants into well-thought-out collaborative learning exercises, which the control condition did not. The level of performance that was set by the pre-assessment was used as a base, and the post-assessment was used to measure the change in academic performance.

### Population and Sample

The sample population comprised Grade 5 students from two elementary schools in Pallandri, Azar, Jammu and Kashmir (AJ&K). Grade 5 was chosen as it is an important stage towards the development of literacy and social skills (Topping, 2005; Vygotsky, 1978).

### Sampling Procedure

- The schools to be used in the research were those that were chosen using purposive sampling.
- In schools, random sampling was used to expose students to the experiment (n = 30) and control (n = 30) groups to offer an equal chance and to minimise bias.

### Research Instrument

A standardized academic achievement test, which was developed in line with the English elementary school curriculum, was the main instrument utilized. The test involved multiple-choice questions, true/false questions, and recall, and the application of the content was easy to test.

### Validity and Reliability

- Expert review was performed to identify content validity, which is performed by specialists in the sphere of English language and methodology of education.
- Piloting the test to a group of students who were not in the main sample helped to support construct and face validity.
- The methods used to identify the reliability of the method were the Cronbach alpha coefficients and the test-retest procedures.

## Pilot Study

A pilot study was conducted with a small sample of students to test the clarity and viability of the test item and its suitability in terms of time. There were minor modifications in the input of the instructors and the students. The alpha of Cronbach was also quite high, and accordingly, it guaranteed internal consistency that will guarantee consistency in measuring in future studies.

## Data Collection Procedure

1. **Permission:** The school authorities were consulted to provide institutional consent.
2. **Pre-Test** Administration: The academic achievement test was administered to the two groups in order to obtain base scores.
3. **Intervention:** The experimental group was involved in pair learning activities (collaborative problem solving, peer teaching, and discussions) for 6-8 weeks, whereas conventional instruction was applied to the control group.
4. **Post-Test Administration:** Changes in both groups were measured by administering the academic achievement test after the administration.
5. **Data Management:** All the data were collected in a systematized way in order to maintain confidentiality, anonymity, and informed consent.

## Data Analysis

Data were analyzed using **SPSS**, employing:

- Descriptive statistics (mean, standard deviation)
- Paired-samples *t*-tests for within-group comparisons
- Independent-samples *t*-tests for between-group comparisons
- Correlation analysis to examine the relationship between pre-test and post-test scores
  Significance was set at $p < 0.05$.

## Results

In this section, the research results are introduced based on the comparison between the impact of pair learning and traditional learning on the academic performance of elementary students. The effects of the intervention were assessed using descriptive statistics, paired-sample correlations, and post-test comparisons.

### Table 1

*Descriptive Statistics of Pre-Test and Post-Test Scores*

| Group | N | Minimum | Maximum | Mean | SD |
|---|---|---|---|---|---|
| Pre-Test Control | 30 | 8 | 15 | 11.67 | 1.58 |
| Post-Test Control | 30 | 9 | 15 | 12.17 | 1.32 |
| Pre-Test Experimental | 30 | 10 | 15 | 12.37 | 1.22 |
| Post-Test Experimental | 30 | 10 | 18 | 15.03 | 2.06 |

Descriptive statistics show that there was a slight improvement in the mean with no significant difference in the control group of 11.67 to 12.17 ($\Delta = 0.50$). On the other hand, there was a greater gain in the experimental group of 12.37 to 15.03 (26.7), meaning that the pair learning intervention had a significant effect after the intervention.

### Table 2

*Paired-Samples Correlation: Pre-Test and Post-Test (Control Group)*

| Pair | N | r | p |
|---|---|---|---|
| Pre-Test & Post-Test Control | 30 | 0.889 | <.001 |

The control group showed a strong positive correlation ($r = .889$, $p < .001$) between the pre-test and post-test scores, thus showing that the post-test scores of the students strongly correlated with the pre-test scores.

**Table 3**

*Paired-Samples Correlation: Pre-Test and Post-Test (Experimental Group)*

| Pair | N | r | p |
|---|---|---|---|
| Pre-Test & Post-Test Experimental | 30 | –0.060 | 0.752 |

The correlation between pre-test and post-test scores in the experimental group was weak and not statistically significant (r = -0.060, p = 0.752), indicating that post-test performance improvements were not strongly influenced by baseline achievement.

**Table 4**

*Paired-Samples Correlation: Post-Test Scores (Control vs Experimental Groups)*

| Pair | N | r | p |
|---|---|---|---|
| Post-Test Control & Post-Test Experimental | 30 | 0.189 | 0.318 |

There was a weak correlation between the post-test scores of the experimental and control groups (r = 0.189, p =0.318), which indicated that the improvements made in the experimental group were mainly not correlated with the performance measures of the control group.

## Results

This is justified by empirical evidence that indicates that the pair-learning intervention was very influential in academic performance as opposed to the conventional teaching aids.

Descriptive statistics revealed that the difference between the mean score in the control group showed a slight improvement, with the pre-test being 11.67 with SD of 1.58, and the post-test being 12.17 with SD of 1.32, and this change was marginal.

Conversely, the experimental cohort performance increased significantly, with a result of 12.37 (SD 1.22) being 15.03 (SD 2.06).

The paired-samples correlation analysis demonstrated the positive correlation of pre-test and post-test scores to be strong within the control group (r = 0.889, p = 0.001), which suggests that the performance level after the test was similar to that before the test, which was mainly similar to the level of performance before the test.

The experimental cohort, in turn, had no statistically significant correlation (r = -0.060, p = 0.752), which means that the improvements did not depend much on starting scores.

Moreover, intergroup correlation of post-test scores of experimental and control groups was weak and non-significant (r1 =.189, p1=.318), which indicates that the gains in the experimental condition were not conditional on the scores of the control condition.

Combined, these findings prove the usefulness of pair-learning interventions in enhancing academic achievement in elementary schools with superior and more dependable results as compared to conventional pedagogical instruction models.

## Summary of Results

- Control group: Academic achievement improved (0.50) in a moderate manner.
- The pair-learning intervention did lead to a significant improvement in the experimental group (2.67).
- Paired-samples correlations Pairwise correlations revealed that pre-test scores were significant predictors of post-test scores in the control group (r = 0.889, p = 0.001) but not in the experimental group (r = -0.060, p = 0.752).
- The low correlation between the post-test scores of the two groups (r = 0.189, p = 0.318) suggests that the improvement observed in the experimental group may not be attributable to similar external factors.

These findings are quantitative, supporting the conclusion that pair learning positively affects students' academic performance, irrespective of their performance at the start of the academic year.

## Discussion

The empirical results indicate that the academic performance of elementary students is significantly improved by pair-based teaching; therefore, Hypothesis 1 is supported. The experimental group members demonstrated a significant increase in post-assessment scores relative to the pre-assessment baseline, and the difference between the two appears to be independent of baseline performance. Such findings are consistent with Social Learning Theory (Bandura, 1977) and the collaborative learning paradigm articulated by Johnson and Johnson (2009), which concludes that orchestrated peer interaction, shared responsibility, and mutual feedback are effective learning strategies. The experimentally non-significant correlation between pre- and post-test scores in the experimental sample also indicates that pair learning did not disadvantage any learners, regardless of their proficiency level, thereby supporting teaching equity.

In comparison, the control group, which received traditional teacher-centered pedagogy, showed only a minor increase in achievement, thereby confirming Hypothesis 2. The strong positive relationship between pre- and post-assessment scores in this group indicates that learners' performance was primarily influenced by prior performance, suggesting the limitations of traditional instructional methods in producing significant academic improvement. Although conventional practices may help preserve classroom order and ensure adherence to curricular material (Rosenshine, 2020; Slavin, 2021), they do not appear to be effective in fostering longer-term engagement and higher-order thinking in elementary English classrooms.

The intergroup comparison supports hypothesis 3, showing that the experimental and control groups differed significantly and that control-group scores did not strongly influence post-test scores. This finding suggests that pair learning is significantly more effective than conventional teaching methods, helping learners achieve substantive learning through dialogue and participation. These results corroborate earlier studies on peer-assisted and cooperative learning, which have been associated with improved understanding, critical thinking, and intrinsic motivation (Slavin, 1995; Topping, 2005).

Collectively, this evidence suggests that the performance of students in pair-based instruction is more than merely advancing academic performance, as the intervention also narrows performance gaps, supporting the case for introducing student-centered interactive pedagogies in grade schools. The implications of these results are unimaginable for curriculum development, teacher training, and teaching policy, especially those dictated by conventional teaching methods.

## Conclusion

The present research gives empirical data that pair learning is a superior and more equitable type of teaching in comparison to the conventional teacher-centered techniques in elementary education. The academic performance of students who were engaged in pair learning was far better in comparison to the performance of students who were engaged in conventional learning, as measured at the baseline, despite the fact that the baseline measure of performance showed only a gain whose value was essentially equal to the value of the baseline performance. These results highlight the importance of structured peer engagement, group problem solving, and interactive learning in enhancing educational outcomes.

The study proposes that the integration of pair learning and other related cooperative learning models into the primary schools should be institutionalized to complement the academic performance, encourage interest, and increase the involvement of students. The professional development programs are aimed at introducing the practice of the organization of peer-learning activities of teachers, and the curricula developers should manage to include activities that are characterized by collaboration with each other to acquire the abilities of higher-order thinking.

Longitudinal research ought to be conducted on pair learning and the applicability of the practice to various disciplines, and the qualitative experiences of students and teachers, to guide the improvement of teaching.

Those findings, combined, reflect on the transformational nature of active and student-centered pedagogies to enhance elementary education and reduce learning disparities.

## Ethical Reflections

The study was conducted in accordance with the principles of informed consent, as evidenced by signed consent forms from participants and their guardians. It had confidentiality, anonymity, voluntary participation, and institutional approval.

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