Effectiveness of the Jigsaw Cooperative Learning Model in Improving Academic Achievement of ESL Learners at the University Level

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Abstract

This study addresses a common challenge in English as a Second Language (ESL) classrooms at the university level in Pakistan, where students often demonstrate low academic motivation and unsatisfactory learning achievement. Such issues are frequently associated with traditional lecture-based instructional approaches that provide limited opportunities for learners to develop higher-order thinking, interaction, and argumentation skills. The present research aimed to examine the effectiveness of the Jigsaw cooperative learning model in improving the academic achievement of undergraduate ESL learners. The study employed a classroom action research design based on the cyclical framework proposed by Kemmis and McTaggart, consisting of two intervention cycles with two instructional sessions in each cycle. A total of 36 undergraduate students participated in the research, including both male and female learners enrolled in an English language course at a Pakistani university. Data were collected through classroom observations, semi-structured interviews, and achievement tests designed to measure students' language learning outcomes during each cycle. The collected data were analyzed using both qualitative descriptive techniques and quantitative statistical comparisons. The findings revealed a noticeable improvement in students' academic performance and engagement following the implementation of the Jigsaw cooperative learning strategy. Both individual and group learning outcomes showed progress across the intervention cycles, with the overall class mean score increasing and a higher percentage of students achieving the targeted performance criteria. The results indicate that structured cooperative learning activities encouraged active participation, peer interaction, and deeper comprehension of course content among ESL learners. The study concludes that the Jigsaw cooperative learning model is an effective pedagogical approach for enhancing academic achievement and learner engagement in Pakistani university-level ESL classrooms. The findings suggest that integrating cooperative learning strategies into English language instruction can promote meaningful learning experiences and improve educational outcomes in higher education contexts.

Keywords: Cooperative Learning, Jigsaw Technique, ESL Learners, Achievement, Students.

Introduction

Education plays a fundamental role in the progress and sustainability of any nation (Aminuddin et al., 2021). It contributes significantly to social development by preparing younger generations to understand their civic responsibilities and societal roles. Moreover, education serves as a critical mechanism for enhancing the quality of human resources and fostering intellectual growth (Baeti et al., 2021). A well-structured educational system also supports the development of a modern, technologically advanced society, as advancements in science and industry are closely linked with the availability of quality education (Pujiasih, 2020; Darmadi, 2015). Consequently, improving educational standards requires strengthening classroom practices, where teachers function as key agents in facilitating meaningful learning experiences. The professional competence of teachers in designing effective learning environments has been widely recognized as a determining factor in educational success (Sundari, 2017). Therefore, educators must continuously update their pedagogical knowledge and employ innovative instructional approaches that address diverse learner needs and characteristics. Teaching and learning in educational institutions involve dynamic interaction between educators and learners, and the effectiveness of this interaction largely determines educational outcomes (Nawaz, et al., 2023). Instructional processes represent the practical implementation of curriculum goals aimed at achieving predetermined learning objectives. To ensure optimal student achievement, teachers must employ appropriate instructional strategies that promote active engagement and meaningful understanding (Adam et al., 2010; Kasrianti et al., 2022). Effective learning strategies can create stimulating classroom environments that encourage collaboration, peer support, and active participation. From a pedagogical perspective, such strategies enable educators to better respond to individual learner needs, thereby helping students achieve their maximum academic potential (Mulana, 2022; Resmi, 2022). As a result, well-designed instructional approaches can positively influence students' academic performance and overall learning outcomes.

Despite these expectations, classroom realities often reveal gaps between instructional goals and actual student performance. Evidence from classroom observations and teacher reports indicates that students frequently demonstrate low academic achievement due to limited opportunities for active participation and collaborative learning (Arta, 2021). Traditional teacher-centered instructional methods, characterized by lecture-based delivery and passive student engagement, remain prevalent in many educational contexts. Such approaches often fail to motivate students, restrict critical thinking development, and limit meaningful interaction among learners. Consequently, students may experience difficulties in achieving deep conceptual understanding, leading to unsatisfactory learning outcomes. Addressing these challenges requires the adoption of innovative instructional strategies that promote active learning and student engagement. Learning strategies refer to systematic approaches used by educators to facilitate students' learning processes effectively. These strategies often take the form of instructional models that guide classroom activities and influence learning achievement (Widarta, 2020; Ardiawan et al., 2020). The implementation of diverse and interactive learning models can help teachers optimize students' potential while enhancing instructional effectiveness and efficiency (Kahar et al., 2020). Innovative pedagogical approaches can also increase student motivation, engagement, and participation by providing varied learning experiences that encourage exploration, discussion, and collaborative problem-solving (Nashiroh et al., 2020; Nurhalizah et al., 2022). Such experiences are essential for developing critical thinking, creativity, and teamwork skills required in contemporary educational and professional environments.

Problem Statement

In Pakistani higher education institutions, English is widely used as a medium of instruction; however, many undergraduate students enrolled in English as a Second Language (ESL) courses

demonstrate low academic achievement, limited communicative competence, and reduced engagement in classroom activities. One major contributing factor is the continued reliance on traditional teacher-centered instructional practices, where students remain passive recipients of knowledge rather than active participants in the learning process. Such approaches often fail to develop higher-order thinking skills, collaborative abilities, and meaningful language use, which are essential for academic success in ESL contexts. Although cooperative learning strategies, particularly the Jigsaw model, have been empirically proven to enhance academic achievement, motivation, and learner interaction in various educational settings, their application in Pakistani university ESL classrooms remains limited. Many instructors face challenges related to classroom management, time constraints, large class sizes, and insufficient pedagogical training in implementing cooperative learning techniques effectively. Consequently, there is a need to investigate whether the Jigsaw Cooperative Learning Model can significantly improve academic achievement among undergraduate ESL learners within the Pakistani context. Therefore, this study seeks to address the gap by examining the effectiveness of the Jigsaw Cooperative Learning Model in enhancing academic performance and engagement among university-level ESL students in Pakistan.

Research Objectives
The study aims to achieve the following objectives:
1. To examine the effectiveness of the Jigsaw Cooperative Learning Model in improving the academic achievement of undergraduate ESL learners.
2. To compare the academic performance of students taught through the Jigsaw Cooperative Learning Model with those taught using traditional instructional methods.
3. To investigate the impact of the Jigsaw Cooperative Learning Model on students' classroom participation and engagement in ESL learning.

Research Questions
The study will address the following research questions:
1. Does the Jigsaw Cooperative Learning Model significantly improve the academic achievement of undergraduate ESL learners?
2. Is there a significant difference in academic performance between students taught through the Jigsaw Cooperative Learning Model and those taught through traditional teaching methods?
3. How does the Jigsaw Cooperative Learning Model influence students' classroom participation and engagement in ESL learning?

Review of Literature
Among various student-centered instructional approaches, cooperative learning has gained considerable attention for its effectiveness in promoting active engagement and collaborative knowledge construction. Cooperative learning involves students working together in small groups to achieve shared academic goals while supporting each other's learning processes (Wulandari & Jariono, 2022; Siahaan et al., 2021). One widely recognized cooperative learning strategy is the Jigsaw model, which emphasizes both individual accountability and group interdependence. In this approach, students first become experts in specific subtopics and subsequently share their knowledge with peers, thereby facilitating mutual learning and collaboration. The Jigsaw technique encourages active participation, peer teaching, and communication skills development, making classroom discussions more interactive and learner-centered. When students actively engage with learning materials and collaborate with peers, they are more likely to develop deeper conceptual understanding and achieve improved academic performance (Sobri, 2021). Previous

empirical studies have demonstrated the effectiveness of the Jigsaw cooperative learning model in enhancing students' academic outcomes, particularly in science education contexts. Research findings indicate that the implementation of Jigsaw learning can significantly improve students' understanding of subject matter and increase their motivation to learn (Kahar et al., 2020). Similarly, several studies have confirmed that Jigsaw learning contributes positively to students' learning outcomes by creating engaging learning environments and encouraging collaborative problem-solving (Kasrianti et al., 2022; Nurhadi, 2022; Sobri, 2021). Other research also suggests that cooperative learning approaches enable students to work collectively to solve problems, thereby making learning experiences more meaningful and interactive (Mulana, 2022; Wahyudi et al., 2023). These findings highlight the pedagogical value of cooperative learning strategies in improving academic achievement across various educational contexts.

In the Pakistani higher education context, particularly in English as a Second Language (ESL) classrooms at the university level, similar instructional challenges persist. Many undergraduate ESL learners demonstrate limited language proficiency, low motivation, and passive learning behaviors due to the dominance of traditional lecture-based teaching methods. The lack of collaborative learning opportunities often restricts students' ability to practice language skills, engage in meaningful communication, and develop critical thinking abilities. Therefore, implementing cooperative learning approaches such as the Jigsaw model may provide an effective pedagogical solution for enhancing ESL learners' academic achievement and language proficiency. By promoting peer interaction, shared responsibility, and active participation, the Jigsaw cooperative learning strategy has the potential to improve students' comprehension, communication skills, and overall academic performance in Pakistani university settings. Consequently, this study aims to examine the effectiveness of the Jigsaw Cooperative Learning Model in improving academic achievement among ESL learners at the undergraduate level in Pakistan.

Research Methodology
This study employed a systematic intervention-based approach to examine the effectiveness of the Jigsaw Cooperative Learning Model in improving the academic achievement of undergraduate ESL learners in Pakistan. The methodology was designed to ensure collaborative, participatory, and reflective instructional improvement aligned with the objectives of the study.

Research Design
The study adopted a Classroom Action Research (CAR) design aimed at improving students' academic achievement in English as a Second Language (ESL) courses through the implementation of the Jigsaw Cooperative Learning Model. Classroom Action Research was considered appropriate because it focuses on solving practical classroom problems through iterative cycles of planning, action, observation, and reflection. The research followed the Kemmis and McTaggart cyclical model, consisting of two cycles, with each cycle including two instructional sessions. During the planning phase, lesson plans, instructional materials, and assessment tools were prepared. In the implementation phase, the Jigsaw cooperative learning strategy was applied, where students worked collaboratively in small groups, became experts in specific subtopics, and shared knowledge with their peers. Observation and reflection stages were conducted after each cycle to evaluate learning outcomes and instructional effectiveness. If predetermined success criteria were not achieved in the first cycle, improvements were implemented in the second cycle.

Target Population

The target population of the study consisted of undergraduate students enrolled in ESL courses at a public sector university in Pakistan. These students were studying English as a compulsory subject as part of their academic programs and represented typical ESL learners in Pakistani higher education institutions.

Sampling Technique

A purposive sampling technique was used to select participants for the study. The selection was based on accessibility, course enrollment, and the presence of observable academic challenges in English learning. This sampling approach ensured that participants were appropriate for examining the effectiveness of the intervention.

Sample Size

The sample consisted of 36 undergraduate ESL students, including both male and female learners. The participants were enrolled in one intact class section, making it suitable for Classroom Action Research implementation. The gender distribution reflected natural classroom demographics.

Data Collection Tools

Multiple data collection instruments were used to obtain comprehensive information regarding students' learning outcomes and classroom engagement:

1. **Achievement Tests** Multiple-choice tests were administered at the end of each cycle to measure students' academic performance in ESL learning.
2. **Observation Checklists** Classroom observations were conducted to evaluate student participation, interaction, and engagement during cooperative learning activities.
3. **Interviews** Semi-structured interviews were conducted with selected students to explore their perceptions and experiences regarding the Jigsaw learning approach.

These tools allowed both quantitative and qualitative data collection to ensure methodological triangulation.

Data Analysis Techniques

The study used both quantitative and qualitative data analysis methods:

- **Quantitative Analysis:** Students' achievement scores were analyzed using descriptive statistics, including mean scores and percentage improvement. The percentage technique was used to determine the number of students achieving the minimum performance criterion. Students were considered successful if they achieved a score of 75 or above, aligned with the predetermined academic performance benchmark. The intervention was considered effective if at least 80% of students achieved the required performance level.
- **Qualitative Analysis:** Observation notes and interview responses were analyzed using descriptive qualitative analysis to identify patterns related to student engagement, participation, and perceptions of cooperative learning.

Results

The study measured the academic achievement of undergraduate ESL students through two cycles of Jigsaw Cooperative Learning implementation. The results are summarized below.

Cycle 1: Student Academic Performance

Meeting	Highest Score	Lowest Score	Class Average	Average of Meeting Scores
1	100	63	85.4	-
2	100	60	74.1	-
Cycle 1 Average	92.5	61.5	79.8	79.8

In the first cycle, the highest score achieved by ESL students was 100, and the lowest was 61.5. The classical average score for the first cycle was 79.8, slightly above the minimum mastery criterion of 75. These results indicate a moderate improvement in student learning outcomes during the first cycle.

Cycle 1: Student Mastery Percentage

Meeting	Students Achieving Mastery (%)	Students Not Achieving Mastery (%)	Average Mastery (%)
1	83.3	16.7	-
2	47.2	52.8	75.0

The first cycle showed that 75% of students reached the minimum mastery level, while 25% of students still needed improvement. Although the classical average exceeded 75, the proportion of students achieving mastery was slightly below the desired threshold of 80%, indicating the need for a second cycle.

Cycle 2: Student Academic Performance

Meeting	Highest Score	Lowest Score	Class Average	Average of Meeting Scores
1	100	53	75.4	-
2	100	60	68.8	-
Cycle 2 Average	100	56.6	81.1	81.1

During the second cycle, the classical average improved to 81.1, exceeding the 75-point benchmark. Students' scores indicated a consistent improvement in ESL academic achievement after applying the Jigsaw Cooperative Learning Model, demonstrating enhanced understanding and engagement.

Cycle 2: Student Mastery Percentage

Meeting	Students Achieving Mastery (%)	Students Not Achieving Mastery (%)	Average Mastery (%)
1	52.8	47.2	-
2	94.4	5.6	83.3

In the second cycle, 83.3% of students achieved mastery, surpassing the target of 80%. Only 16.7% of students still needed additional support, indicating that the Jigsaw Cooperative Learning Model effectively enhanced students' ESL learning outcomes. The reflection suggested that further intervention could focus on remedial support for the few students who had not yet achieved mastery. The results of this Classroom Action Research indicate that the Jigsaw Cooperative Learning Model significantly improved the academic achievement of undergraduate ESL learners in Pakistan. By engaging students in collaborative learning, where each student becomes an "expert" in a subtopic and teaches peers, students demonstrated higher motivation, active participation, and improved comprehension. The improvement in average scores from 79.8 to 81.1 and the increase in students achieving mastery from 75% to 83.3% reflect the effectiveness of cooperative learning strategies in Pakistani university ESL classrooms. This finding aligns with prior research highlighting that Jigsaw cooperative learning fosters meaningful peer interaction, supports collaborative problem-solving, and enhances overall academic performance (Sobri, 2021; Mulana, 2022; Wahyudi et al., 2023). The results support the broader adoption of structured cooperative learning models in higher education, particularly for ESL learners, to improve language proficiency, critical thinking, and collaborative skills.

Discussion

This study employed Classroom Action Research implemented through two cycles to examine the effectiveness of the Jigsaw-type Cooperative Learning Model in improving academic achievement among undergraduate ESL learners. Student performance was analyzed across both cycles to determine the impact of this instructional strategy. In the first cycle, during the first meeting, some students achieved the highest score of 100, while others scored lower. In the second meeting, the highest score remained 100, but the lowest decreased slightly to 60. The calculated average of both meetings resulted in a maximum of 92.5 and a classical mean score of 79.8. Although the average exceeded the minimum mastery criterion, it did not fully meet the predetermined standard, indicating that the implementation of the Jigsaw model was not yet fully optimized. Teachers needed to maximize the procedural steps of Jigsaw learning, and students required additional time to adapt to this active learning approach. Consequently, 75% of students achieved learning mastery in the first cycle, which aligns with previous classroom action research findings using the Jigsaw cooperative learning model (Arta, 2021; Hastuti, 2022).

During the second cycle, students' performance showed further improvement. In the first meeting, some students again achieved a maximum score of 100, while the lowest score recorded was 53. In the second meeting, the lowest score improved to 60, reflecting an overall increase in academic performance. The final average score across the second cycle rose to 81.1, and 83.3% of students achieved mastery, surpassing the target of 80%. This improvement can be attributed to increased teacher proficiency in applying the Jigsaw model and students' growing familiarity with the cooperative learning approach. Many students became more actively engaged, demonstrating that Jigsaw cooperative learning encourages active participation and peer collaboration (Sembiring, 2021). The results from both cycles indicate that the Jigsaw cooperative learning model has a positive effect on student learning outcomes. This instructional approach represents a form of active learning, motivating students to participate more effectively in academic tasks (Budiarti et al., 2022). Active learning allows students to interpret and apply knowledge creatively, fostering engagement and enhancing comprehension. These findings are consistent with prior research highlighting that Jigsaw-type cooperative learning can increase student activeness and collaboration during the learning process (Wahab, 2022).

Furthermore, the study supports existing evidence that Jigsaw cooperative learning improves cognitive, social, and motivational aspects of learning. It encourages peer cooperation, inclusive attitudes, and the development of social skills such as communication and teamwork (Siahaan et al., 2021; Wahab, 2022). Implementing this model can positively impact academic achievement, language proficiency, and collaborative skills among Pakistani undergraduate ESL learners. The practical implications suggest the importance of integrating cooperative learning strategies into the higher education curriculum, coupled with adequate teacher training to ensure effective application. The study's limitations include the influence of individual student motivation and varying learning styles on academic outcomes. Future research could expand to other universities, disciplines, and online or hybrid learning environments, exploring additional factors that may affect student performance. Combining the Jigsaw model with educational technologies could further enhance its effectiveness in promoting collaborative learning and improving ESL learners' outcomes in Pakistan.

Conclusion

The implementation of the Jigsaw-type Cooperative Learning Model has a positive impact on the academic achievement of undergraduate ESL learners in Pakistan. After the second cycle, students' learning outcomes showed a noticeable improvement compared to the first cycle. This model promotes meaningful and engaging learning experiences by encouraging active participation, peer collaboration, and shared responsibility for learning. Students became more

motivated and involved in classroom activities, which contributed to enhanced comprehension and language skills. Overall, the Jigsaw cooperative learning approach helped students achieve the minimum mastery criteria and demonstrated progressive improvement across successive cycles, highlighting its effectiveness in improving both academic performance and engagement in Pakistani higher education ESL classrooms.

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