

Effectiveness of the Flipped Classroom Model in Enhancing English Grammar Skills at the Higher Secondary Level



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Abstract: *This study was conducted in order to investigate the effectiveness of the flipped classroom model in enhancing English grammar skills at the higher secondary Level. The flipped classroom model is a teaching approach where students learn new material at home through videos or readings and use class time for interactive activities under the supervision of the teacher. Objective of the study were: (1) To assess the effectiveness of the Flipped Classroom Model in improving students' understanding of English grammar at the higher secondary level; (2) To compare the impact of the Flipped Classroom Model with traditional teaching methods in enhancing English grammar skills at the higher secondary level. The study employed an Equivalent Group, Pretest-Post Test Design. The population consisted of all male government higher secondary schools in Khyber Pakhtunkhwa, totaling 469 schools with 336,021 students. A simple random sampling technique was used to select 70 students of grade 12 from Higher Secondary School No.1 Kalan Nowshera. These students were divided into control and experimental groups through paired random sampling. A pretest and a posttest were used for data collection. T-test was used for the analysis of the collected data. Data analysis showed that the group taught using the flipped classroom model performed significantly better in learning English grammar. Based on these positive results, it's recommended to apply the flipped classroom model to various subjects across different levels.*

Keywords: Flipped Classroom Model, English Grammar, Higher Secondary Level, Pretest-Post Test Equivalent Group Design, Pair Random Sampling, T-test

Introduction

Grammar serves as the foundation of any language, often seen as its structural framework. It governs how words are arranged and sentences are formed, ensuring that meaning is clearly conveyed. Like a binding force, grammar connects individual words into coherent and meaningful expressions. For this reason, mastering grammar is essential for anyone learning a new language. A solid grasp of

grammatical rules enables learners to accurately interpret the ideas and intentions of speakers or writers (Liza, 2020).

Teaching grammar presents significant challenges, making it a difficult task for both educators and learners. As language teaching methods continue to evolve, grammar has gained attention as a key area of focus. However, when these innovative approaches fail to produce the desired results, grammar itself is

often blamed for the shortcomings of the techniques, rather than the methods being scrutinized (Ellis, 2006).

Urdu is the national language of Pakistan, yet only around 8% of the population speaks it as their native tongue. The country is also home to several provincial languages, including Punjabi, Pashto, Balochi, and Sindhi. Additionally, many people speak other major regional languages like Saraiki, Hindko, and Kashmiri. English, while spoken by a small portion of the population in everyday life, plays a prominent role as a second language due to its growing importance. It is widely used in various fields such as business, government administration, the legal system and research (Rahman, 2020).

The concept of the "flipped classroom" was first introduced in Colorado in 2006. In this approach to learning, traditional lectures and explanations are moved outside the classroom, with students engaging with the material at home through videos or notes. Class time is then dedicated to activities and discussions that deepen understanding, allowing students to apply what they have learned at home in a more interactive, hands-on environment (Ekineh, 2022).

According to Bernard (2015) flipped classroom is a technique where students receive the relevant information about the contents before the class time in form of text notes or videos. During the formal classroom, the teacher provides supervision to the learners and different activities are designed by teacher related to the content learnt through the material provided by the teacher. Flipped classroom approach is a student centered leaning approach. This learning approach was started by teachers in order to provide relaxation to those students who could not attend classes regularly.

Incorporating technology has proven to be highly beneficial. Information and Communication Technology (ICT), which includes computers, tablets and the internet, plays a crucial role in modern classrooms. Technology is no longer just a luxury but a necessity for effective teaching and learning. It enables teachers to deliver lessons in more engaging and interactive ways, making learning

more accessible and enjoyable for students. Moreover, technology provides students with valuable tools to enhance their skills and understanding. Whether it's using educational apps, conducting research online, or collaborating on projects digitally, technology empowers students to learn at their own pace and explore topics in depth (Wang, 2010).

Problem Statement

Mushtaq and Zehra (2016) highlight the importance of English in Pakistan, as it is the official language. However, despite completing secondary or intermediate education, many students struggle to write grammatically correct paragraphs. This issue stems from outdated teaching methods, where teachers lecture and students passively take notes, leaving little room for interaction or skill practice. While the world moves toward modern, technology-driven learning, many Pakistani teachers continue using ineffective, traditional techniques, relying on memorization rather than practical application of grammar.

The current situation raises concerns about the effectiveness of English language teaching in Pakistan. To improve grammar instruction, integrating technology, promoting active student engagement and focusing on practical applications are crucial. This study aimed to explore the effectiveness of the flipped classroom model in enhancing English grammar skills at the higher secondary level

Objective

The Objectives of this study were:

1. To assess the effectiveness of the Flipped Classroom Model in improving students' understanding of English grammar at the higher secondary level.
2. To compare the impact of the Flipped Classroom Model with traditional teaching methods in enhancing English grammar skills at the higher secondary level.

Hypotheses

The following null hypotheses were tested to achieve the objectives of the study:

H₀₁: There is no significant difference in the pre-test mean scores between students in the control group and those in the experimental group.

H₀₂: There is no significant difference in the post-test mean scores between students taught using the flipped classroom model and those taught through traditional methods.

H₀₃: There is no significant difference between the pre-test and post-test mean scores within the experimental group.

Significance of the study

This experimental study will have a significance on the basis of the following reasons:

1. This research will provide an awareness about the teaching of grammar through Flipped Classroom Model.
2. This study will contribute to the literature on the Flipped Classroom Model.
3. It will provide suitable professional guidelines to teachers for enhancing learning capabilities of the learners and for making their teaching learning process more effective by using Flipped Classroom Model their classrooms.
4. This study will be important for the policy makers to make policies for the application of “Flipped Classroom Model” in different subjects on various levels or grades.

Delimitation of the Study

This experimental study was delimited to Government Higher Secondary School Nowshera Kalan No.01, KP, involving only male students from the 12th grade. The study focused on the English grammar topics outlined for 12th grade in the National Curriculum.

Research Design

This study used an Equivalent Group, Pretest-Posttest Design, commonly applied in educational and social sciences to assess the effectiveness of a treatment. A pretest was conducted to measure students' initial knowledge and based on these scores, students

were divided into control and experimental groups using pair-random sampling. The experimental group received the treatment, while the control group was taught using traditional methods. After the treatment, a posttest was conducted to compare the outcomes between the two groups.

Population of the Study

The study population included all male government higher secondary schools in Khyber Pakhtunkhwa, covering 28 districts with 336,021 students enrolled in 469 schools (Government of Khyber Pakhtunkhwa, 2021). The target population was narrowed down to 27 higher secondary schools in Nowshera district, comprising 15,831 students. Due to the experimental nature of the research, it was further limited to Government Higher Secondary School No. 1 Kalan, Nowshera.

Sample Size and Sampling Technique

The participants for this study were selected using a simple random sampling technique from grade 12 students at Higher Secondary School No.1 Kalan Nowshera. All participants were male, aged between 17 and 19 at the time of admission. Out of 103 enrolled students, a sample of 70 was randomly selected. These students were then divided into control and experimental groups, each consisting of 35 students, using paired random sampling based on their pretest scores.

Data Collection Tools

As this study was experimental, therefore a pre-test and a post-test were used in order to collect data from the sample students. Both the tests i.e, pre-test and post-test were developed from units 5-9 of the English textbook for Grade XII and each test included fifty multiple-choice questions, with a total of fifty marks. The wording and themes of the questions remained consistent across both tests. The pretest, focused on grammar, was administered to the students, and based on the results, they were divided into experimental and control groups using paired random sampling. After a seven-week intervention period, the post-test was conducted with the same students to measure the outcomes.

Treatment

After dividing students into control and experimental groups based on the pretest results, the experimental group underwent a seven-week intervention using the Flipped Classroom Model. The duration of class was 40 minutes and were held three times a week i.e, on Thursday, Friday, and Saturday, following Flipped Classroom Model based lesson plans. In contrast, the control group was taught grammar through the traditional lecture method. Both groups were taught under similar classroom conditions, with different teachers assigned to each group. The teachers had nearly identical qualifications and teaching experience.

The detail of each lesson for the treatment group was as follows:

- Pre-recorded videos on the lesson topics were shared with the students in experimental group before the class.
- Students were required to watch these videos at home to learn about the topic before coming to the class.
- In class, the teacher engaged students by

asking them to recall and share their understanding of the topic.

- The teacher then noted the students' responses and wrote their key ideas on the board for further discussion.
- The teacher facilitated a range of activities in the classroom, such as syndicate discussions, think-pair-share, fishbowl exercises, gallery walks, and presentations, all focused on the topics the students had previously watched in the video.

Data Analysis Technique

The data collected was analyzed using the following statistical methods:

1. Descriptive statistics, including mean and standard deviation, were applied to evaluate the pretest and posttest results.
2. Inferential statistics such as the t-test: a dependent t-test to compare the control and experimental groups and an independent t-test to compare the same group at different point.

Data Analysis and Interpretation

Table 4.1: Significance of difference between pre-test mean scores of control and experimental group.

Groups	N	Mean	SD	df	t-test value	p-value	Effect
Control	35	14.46	5.39	68	0.1657	0.8693	Not significant
Experimental	35	14.69	5.65				

t Value at 0.05 = 1.995

Table 4.1 displays the pre-test results for control and experimental group. The control group had a mean score of 14.46, while the experimental group had a mean score of 14.69, indicating that their scores were similar before the treatment. The standard deviation (SD) for the control group was 5.46, and for the experimental group,

it was 5.65. The t-test value calculated was 0.1657, which is lower than the table value of 1.995. Additionally, the p-value of 0.8693 exceeded the significance level of 0.05. Therefore, the difference between the groups' pre-test scores was considered "not significant," showing that there was no notable difference between the groups before the treatment.

Table 4.2:Significance of difference between post-test mean scores of both the groups.

Groups	N	Mean	SD	df	t-test value	p-value	Effect
Experimental	35	24.94	8.41	68	2.9078	0.006	Significant
Control	35	30.86	8.19				

t Value at 0.05 = 1.995

Table 4.2 outlines the post-test results for both groups. The control group had a mean score of 24.94 with a standard deviation (SD) of 8.41. In comparison, the experimental group had a higher mean score of 30.86 with an SD of 8.19, surpassing the control group by 5.92 points. The

t-test value calculated was 2.9078, which is significantly greater than the table value of 1.995. Furthermore, the p-value of 0.006, being below the 0.05 significance level, confirms a statistically significant difference between the two groups. This indicates that the experimental group performed considerably better than the control group in the post-test.

Table 4.3: Significance of difference between the mean pre-test and post-test scores of the experimental group.

Groups	N	Mean	SD	df	t-test value	p-value	Effect
Pre-Experimental	35	14.69	5.65	68	9.61559	<0.00001	Significant
Post-Experimental	35	30.86	8.19				

t Value at 0.05 = 1.995

Table 4.3 shows the mean difference in scores for the experimental group between the pretest and posttest. The experimental group's mean score on the pretest was 14.69, while on the posttest, it was 30.86, indicating an increase of 16.76 points after the treatment. The standard deviation (SD) for the pretest was 5.65, compared to 8.19 for the posttest. The calculated t-test value of 9.61559 exceeded the critical value of 1.995, and the p-value of <0.00001 was well below the 0.05 significance level. These findings indicate a statistically significant result, confirming a clear and notable improvement in the experimental group's performance after the treatment.

Findings

The analysis of the collected data revealed the following findings.

- The results (Table 4.1) showed that there was no significant difference in the mean scores of control and experimental group before the treatment.
- The results (Table 4.2) demonstrated that the flipped classroom model was more effective in teaching English grammar compared to the traditional teaching method at the higher secondary level.
- The results (Table 4.3) showed that the flipped classroom model had a significant effect on English grammar learning, with the experimental group demonstrating significant score improvements after the treatment.

Discussion

The analysis of the collected data involved t-tests. The results of the pre-test analysis showed

no significant difference between the mean scores of both the groups in their English grammar learning. The p-value indicated that the differences were not statistically significant at the 0.05 level, leading to the acceptance of the null hypothesis, "There is no significant difference in the pre-test mean scores between students in the control group and those in the experimental group." These results align with findings by Tufail (2021), who also reported no significant difference in pre-test scores between students taught through traditional methods of teaching and using the flipped classroom model.

After a seven-week treatment period, a post-test was administered to the students. The results revealed that students who were taught using the flipped classroom model significantly outperformed those who received traditional instruction. The statistical analysis, indicated by the p-value, confirmed that the differences in mean scores between the two groups were significant at the 0.05 level. This led to the rejection of the null hypothesis, "There is no significant difference in the post-test mean scores between students taught using the flipped classroom model and those taught through traditional methods." These results align with findings from Lai and Hwang (2016), who also observed substantial improvements in student outcomes when using the flipped classroom model compared to conventional teaching methods.

Analysis of the mean scores from the pre-test and post-test for the experimental group revealed a notable improvement in their English grammar learning. The p-value was below the significance level, confirming that the treatment had a significant effect on the learners. Consequently, the null hypothesis stating that "There is no significant difference between the pre-test and post-test mean scores within the experimental group." was rejected. This outcome is in line with the findings of Alam, Khurshid, and Alam (2017), who also reported significant improvements in performance in their experimental group following the treatment.

Conclusions

The following conclusions were drawn based on the findings of the study:

1. It was concluded that there was no significant difference in English grammar understanding between the experimental and control groups before the treatment.
2. The study concluded that the flipped classroom model significantly enhanced students' understanding of English grammar. There was a significant difference between the pretest and posttest scores of experimental group.
3. It was concluded that students taught through the flipped classroom model outperformed those taught through traditional methods in English grammar at the higher secondary level.

Recommendations

On the basis of conclusions, the following recommendations were made:

1. Curriculum developers should give priority to including and implementing the flipped classroom strategies into teacher training programs, including induction training, in-service training and pre-service, to ensure educators are fully equipped to use this model for improving student learning outcomes.
2. Educational authorities, such as Director, Secretary and the Minister of Education should actively support the implementation of the flipped classroom approach. Their support could include offering resources, training and guidance to help teachers transition smoothly to this teaching approach.
3. Government should allocate resources to produce high-quality and easy-to-understand instructional videos. These videos should be aligned with textbook content and be easily available for students to review outside the school.
4. Policymakers should explore the

integration of the flipped classroom method, particularly in subjects that demand strong conceptual understanding and active student participation. This teaching approach not only fosters better student engagement but also allows learners to progress at their own pace, leading to improved academic performance.

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