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Effect of Flipped Classroom on Students' Deep Learning in English Subject at Secondary Level

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ABSTRACT: Main theme of the study was to investigate the effect of flipped classroom students 'deep learning in English at secondary level. Major objective of the study was to find out effect of flipped classroom strategy students' deep learning in the subject of English at 9th grade students. The study was experimental in nature and true experimental design pretest post-test design only was used to conduct the study. All 9th graders enrolled in Govt. Girls High School Faisalabad district Faisalabad was the target population of the study which was 142. 60 students were randomly selected as random selection. Researcher administered Students' Cognitive Engagement Test on randomly selected 60 students. The students were split into control and experimental groups using the matched-pair technique. A research Instrument, Students' Deep Learning Test (SDLT) was developed for the collection of data. Treatment (Flipped Classroom strategies) for six weeks was given to the experimental group. After completion of treatment posttest was administrated on both experimental and control groups. The analysis of the data used descriptive statistics as well as inferential statistics (One-Way ANCOVA). On the basis of findings, it was concluded that flipped classroom strategies had significant effect on deep learning in English of 9th grade students. On the basis of conclusions, it was recommended that educational institutions should adopt flipped classrooms to enhance deep learning and student engagement in English studies. Further research across diverse contexts is essential to confirm its effectiveness and explore long-term impacts on academic achievement, critical thinking, motivation, and independent learning outcomes.

KEYWORDS: Flipped, Classroom, Deep, Learning, Education, Secondary School Level

Introduction

Background of the Study

In the evolving landscape of education, there is a growing need to adopt pedagogical strategies that foster critical thinking, creativity, and deeper understanding among students. Traditional teacher-centered approaches, especially in English language classrooms, often emphasize memorization and passive learning, which may not effectively support the development of higher-order thinking skills (Biggs & Tang, 2011). As a result, there has been increasing interest in student-centered methodologies such as the flipped classroom model, which moves the concentration from inactive reception to active learning.

In a flipped classroom, direct teaching takes place outside the classroom by using video or digital files and classwork is focused on activities, solving problems and group projects (Bergmann & Sams, 2012). Because students pace themselves in this model, the class time is spent on more in-depth talking and personal assistance for each student. Experts claim that using flipped instruction can help students become more motivated, engaged and do better academically in different fields (Lo & Hew, 2017; Zainuddin & Halili, 2016).

The purposes in English language education are to achieve language skills and develop skills in critically analyzing, interpreting and communicating in a meaningful way. Deep learning is about fully exploring and reflecting on content, and these are some of its main aspects (Marton & Säljö, 1997). The flipped classroom model which encourages learning through activity and collaboration, is in line with what deep learning wants to accomplish in language classes. Studies show that flipped classrooms improve students' critical thinking, their speaking and writing skills and their use of what they learn in real-life situations (O'Flaherty & Phillips, 2015).

Even though flipped classrooms may bring many benefits, their use in schools throughout the world, particularly in English language study, is still little studied. Implementing flipped learning is beneficial and rigorous studies are needed to find out its impact on students' ability to deepen their learning at the secondary school level. This research attempts to find out how secondary students learn English deeply when the flipped classroom approach is used and share this information to support creative teaching approaches.

Statement of the Problem

Most of the teaching in traditional secondary English classrooms depends on lectures, following a textbook and learning by heart. Such traditional methods usually focus on students' intermediate abilities which means they study facts at the surface level and don't learn to apply what they know. As a consequence, many students do not give much attention to English content which reduces their ability to think critically, be creative and study independently.

With technology being used more in education, new ways to teach like the flipped classroom have surfaced as successful choices to the typical classroom method. Students watch videos or read before class using the flipped approach which allows class time to be spent on tasks that require more thought. There is some good evidence that this approach benefits higher education and some STEM subjects, but it hasn't been well studied or widely used in English classroom at the secondary level, especially where classic teacher-centered methods are common.

Also, although deep learning is recognized as key for good academic progress, only a few investigations have looked into the link between flipped classroom techniques and promoting deep learning in English for secondary students. We do not have enough proof to say for sure if this learning approach helps students analyze, interpret and think critically about language.

For these reasons, this study is designed to find out how secondary students learn English better under the flipped classroom model. The findings attempt to show whether this approach lets students think critically and reflect on their learning of English content.

Objective of the Study

The overall purpose of the research was to investigate if using flipped learning strategies in English would help 9th graders grasp the concepts well.

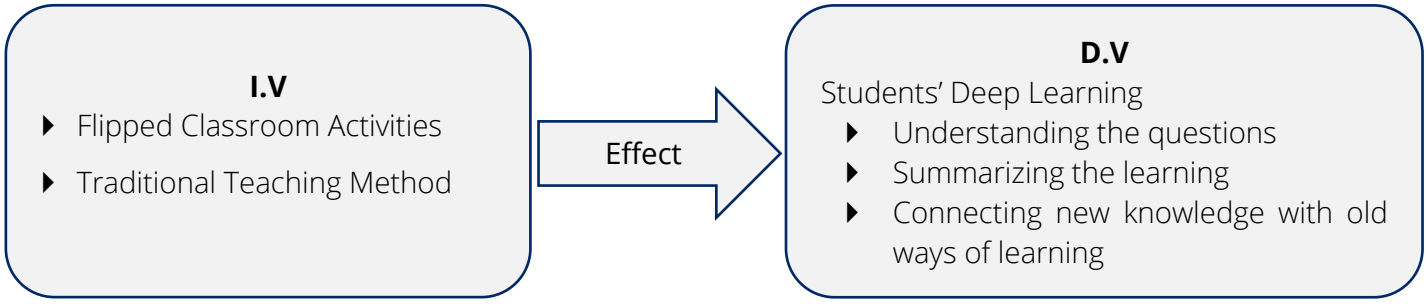
Hypothesis of the Study

Following the research objective, the researcher applied a specific research null hypothesis to the data. The H0 states that using a flipped classroom does not significantly impact deep learning of English for 9th grade students.

Conceptual Framework

Figure 1

Conceptual Framework



Recently, the popularity of the flipped classroom model has grown because of the restrictions of traditional teaching. The flipped classroom model, starting with Bergmann and Sams (2012), replaces the traditional way of doing lessons by reversing the structure. Video lessons or digital assets are used to provide the main instruction at home and critical thinking exercises are done in class through group work and discussions. Based on constructivist learning theory, active learning, social interaction with others and freedom to choose tasks are key parts of this method (Brame, 2013). It is believed that the flipped classroom improves participation and achievement since students get to choose the rate they learn and have more discussions with peers in class.

In deep learning, learners build their knowledge by seeking clarification, connecting various ideas and putting concepts to work in various new situations (Biggs & Tang, 2011). Critical reading, understanding texts in depth, communicating well and reflecting are all included in the concept of deep learning in English language education. In 1997, according to Marton and Säljö, the concept was presented in higher education by labeling two common learning patterns: surface (learning by heart) and deep (looking into the meaning and using what you learn). At the secondary level, deep learning in English is important so that students become able to interpret messages, express their views and participate in discussions about literature.

A number of studies have shown positive outcomes from flipped learning in different learning areas. Lo and Hew (2017) discovered that flipped classroom models do well at improving student motivation, interest and performance when matched with active learning activities. In the same way, O'Flaherty and Phillips (2015) found that students in flipped learning environments had stronger understanding and were better at critical thinking than those in conventional classes. Studies in the English language field have noted that flipped

instruction benefits students by involving them more and encouraging better understanding of reading and writing (Mehring, 2016).

Nevertheless, there is not yet any firm data about the role of the flipped classroom in deep learning of English specifically in secondary education. Much of the studies consider higher education or special subjects, so not much is known about language arts at the middle and high school grade levels. Also, flipped instruction has not been tested extensively in places where resources are scarce or in developing nations (Zainuddin & Halili, 2016). The study attempts to fill this gap by researching if adopting a flipped classroom approach can encourage better cognitive involvement and more successful learning in English for secondary school students.

The flipped classroom model often encourages learners to engage more vigorously, especially in language classes. The use of traditional teaching methods tends to have students passively taking in lessons, rather than actively taking part in them (Freeman et al., 2014). In this model, students stay involved by doing things such as group work, checking each other's work, using roles in plays and taking part in team writing activities. They help students relate more to their peers and immerse themselves in language and what is being taught. According to Roehl et al. (2013), students in flipped classrooms tend to manage their own learning, giving them more chance to learn English independently and motivating themselves.

The job of the teacher is very different when they use a flipped classroom. Instead of lecturing, teachers work more as learning guides or helpers. Because of this shift, teachers can attend to each student better and provide feedback quickly which helps meet students' different educational needs (Tucker, 2012). In English language teaching, the flipped approach helps teachers devote more time to helping students with writing, speaking or understanding during class. Horn et al. (2015) agreed the model is helpful in closing gaps because it makes learning available to all and more responsive to students' needs.

There are reports that students taught with the flipped model improve their grades and knowledge. As shown by Awidi and Paynter (2019), flipped instruction boosted students' ability to reflect and their involvement in writing at the university level. In the same way, Hung (2015) discovered that teaching English by the flipped approach improved high school student performance on language tasks in Taiwan and boosted their interest in learning English. The evidence suggests that with flipped classrooms, students can access more thorough learning, as it promotes the key language skills of critical thought and using new language in context.

Even though flipped learning is supported by a lot of evidence, many still face issues in using it. There is a big focus on making sure students are prepared. For flipped learning to be effective, students are expected to go through some assigned homework, like watching videos or reading. Some students do not have equal motivation or the needed tools at home, so the model may not work as well as it could (Milman, 2012). Teachers can find that it takes time to completely remake their lessons and learn to use new technology. Herreid and Schiller (2013) point out that teachers need professional development and backup from the institution to make flipped teaching work successfully.

While most of the current research focuses on higher education or STEM subjects, studies specifically targeting secondary level English education remain limited. There is a need for more rigorous, context-specific

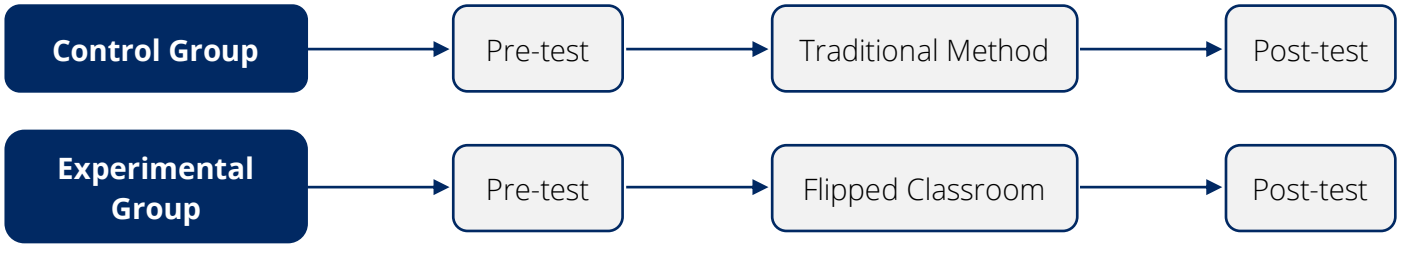
research to understand how flipped instruction can be adapted for younger learners and whether it can produce similar gains in deep learning. Furthermore, the extent to which flipped classrooms enhance different domains of deep learning such as metacognition, transfer of knowledge, and critical interpretation in English subjects is still an area that warrants exploration.

Research Design

The aim of this research was to examine the effect of flipped classroom strategy on deep learning of students in English. This study was quantitative as data were collected quantitatively. There were two variables being investigated in this study. Flipped classroom strategy was independent variable while students' deep learning was the dependent variable. According to Creswell (2002), experimental design is used to investigate possible cause and effect of independent variable on dependent variable. True experimental design pretest post-test design only was used to conduct the study. Two equal groups were formulated through random assignment. One was control and the other was experimental group. Data were collected quantitatively through deep learning scale which is linked with philosophical paradigm of positivism (Fraenkel et al., 2012).

Figure 2

Research Design



All 9th graders enrolled in Govt. Girls High School Faisalabad district Faisalabad was the target population of the study which was 142. All 9th graders of Govt. Girls High School Faisalabad district Faisalabad were the accessible population of the study. Double stage random sampling technique was used for the true representation of subjects for pretest-post-test experimental design of the treatment research. Total number of students was 142 and 60 students were randomly selected as random selection. 60 students were randomly selected from total 142 students. Researcher administered Students' Deep Learning scale on randomly selected 60 students. The students were split into control and experimental groups using the matched-pair technique. It is suggested that in treatment study the sample of 30 was a large and adequate sample to proceed an experiment (Fraenkel et al., 2012). Treatment was given through 2 English subject specialists having equal academic and professional qualification.

Instrumentation

The development and promotion in Students' Deep Learning is the foundation for academics. Bloom's Taxonomy used as base in teaching and learning for development of SLOs from curriculum. The taxonomy is very effective and mostly uses to assess different types of knowledge and development of students deep learning. Bloom's Taxonomy is a perfect guide for an effective teacher. Deep learning of 9th grade students in English was tested through (MCQs). The content selected for the Students' Deep Learning Test (SDLT) MCQs

type test was from curriculum provided by Punjab Textbook Board (2006) Pakistan, titled as Textbook of English 9th grade studied in all Punjab.

Development of Flipped Classroom Strategies (FCS) Module

In the current study, a Flipped Classroom Strategies (FCS) Module was developed by the researcher and validated by six subject specialists in English from the School Education Department. The development of the module was carried out in three stages. In the first stage, relevant Student Learning Outcomes (SLOs) were selected and aligned from the English content outlined in the National Curriculum for English Grades IX, 2006, focusing on the first seven lessons and their associated SLOs. In the second stage, the FCS Module was developed based on a blueprint derived from these SLOs. Finally, in the third stage, the researcher designed 30 lesson plans, each aligned with both the SLO blueprint and the Flipped Classroom Strategies (FCS) Module.

Data collection of Flipped Classroom Strategies (FCS) Module

Data was collected by following instructions of pretest-posttest experimental design. Students' Deep Learning Test (SDLT) was implemented as pretest. 60 students were randomly selected from total 142 students as random selection. Researcher administered Students' Cognitive Engagement scale on randomly selected students. Students were randomly allocated to control and experimental groups by means of the matched-pair technique.

Table 1

One-Way ANCOVA Comparing Control and Experimental Groups on Understanding Questions Regarding Deep Learning of Students

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	32.859[a]	2	16.430	16.861	.000	.372
Intercept	118.139	1	118.139	121.243	.000	.680
Understanding Questions-pre	6.193	1	6.193	6.355	.015	.100
Group	26.667	1	26.667	27.37	.000	.324
Error	55.541	57	.974			
Total	434.000	60				
Corrected Total	88.400	59				

Note. R Squared = .372 (Adjusted R Squared = .350)

The efficiency of two distinct teaching strategies intended to enhance students' comprehension of the question (deep learning) was compared by means of a one-way between groups ANCOVA. The dependent variable was the students' comprehension scores (depth learning), whereas the independent variable was the teaching approach (traditional teaching technique and flipped classroom strategies). Following the conclusion of the intervention, a test was administered. The covariate in this study was the participants' scores on pre-understanding question.

To make sure that the expectations of familiarity, linearity, and homogeneity of alteration, as well as the homogeneity of the regression slope and precise measurement of the covariate, were not broken, initial tests were done. A significant difference appeared in the scores for understanding the question (deep strategy)

after adjusting for understanding the question F (1,57) =27.37, p=.000, partial eta squared=.324 for the two intervention groups. There was a strong relationship between the scores from the pre-test and the post-test on deep learning questions.

Table 2

One-Way ANCOVA Comparing Control and Experimental Groups on Summarizing the Learning Regarding Deep Learning of Students

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	12.154[a]	2	6.077	5.694	.006	.167
Intercept	171.054	1	171.054	160.286	.000	.738
Summarizing the Learning-pre	.004	1	.004	.004	.952	.000
Group	11.087	1	11.087	10.39	.002	.154
Error	60.829	57	1.067			
Total	395.000	60				
Corrected Total	72.983	59				

Note. R Squared = .167 (Adjusted R Squared = .137)

The efficiency of two distinct teaching strategies aimed at enhancing learning summarization (deep learning) was compared by a one-way between groups analysis of covariance. The dependent variable was scores on learning summarization (deep learning), whereas the independent variable was the teaching approach (traditional teaching technique and flipped classroom strategies). Following the conclusion of the intervention, a test was administered. The covariate in this study was the participants' scores on the pre-summarizing the learning (deep learning).

To make sure that the norms of familiarity, linearity, and similarity of variance, as well as the homogeneity of the regression slope and precise extent of the covariate, were not broken, introductory tests were implied. On the post test for summarizing learning (deep learning), the scores in the two intervention groups were quite different once the pre-test scores for summarizing knowledge were controlled (F (1,57) =10.39, p < .001, partial eta squared=.154). There was a major relationship between the pre-test and post-test scores on summarizing the learning (deep learning) seen in the partial eta squared value of.167.

Table 3

One-Way ANCOVA Comparing Control and Experimental Groups on Connecting New Knowledge with old Ways of Learning Regarding Students' Deep Learning

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	8.850[a]	2	4.425	5.113	.009	.152
Intercept	188.231	1	188.231	217.482	.000	.792
Connecting New Knowledge-pre	.033	1	.033	.038	.846	.001
Group	8.763	1	8.763	10.12	.002	.151
Error	49.334	57	.866			
Total	501.000	60				
Corrected Total	58.183	59				

Note. R Squared = .152 (Adjusted R Squared = .122)

The efficiency of two distinct teaching strategies intended to enhance the integration of new knowledge with traditional learning methods (deep learning) was compared with a one-way ANCOVA. The dependent variable was scores on the ability to connect new information with traditional learning methods (deep learning), while the independent variable was the teaching technique (traditional teaching method and flipped classroom strategies). Following the conclusion of the intervention, a test was administered. In this research, the covariate was the participants' pre-connecting the knowledge withhold ways of learning, which measures how well students connect new information with their prior learning methods.

To make sure that the norms of familiarity, linearity, and similarity of variance, as well as the homogeneity of the regression slope and precise extent of the covariate, were not broken, introductory tests were implemented. The two intervention groups differed significantly in the post-intervention scores of connecting the new knowledge with old ways of learning after adjusting the pre-connecting the new knowledge with old ways of learning score (F (1,57) =10.12, p=.000, partial eta squared=.151). It was found that there is a strong link between the pre-test and post-test results in connecting what is learned in class with past training, with a partial eta squared value of.152.

Table 4

One-Way ANCOVA Comparing Control and Experimental Groups on Students' Deep Strategy

Source	Type III Sum of Squares	Df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	135.782[a]	2	67.891	22.637	.000	.443
Intercept	560.449	1	560.449	186.869	.000	.766
Deep Strategy-pre	.782	1	.782	.261	.612	.005
Group	123.281	1	123.281	41.11	.000	.419
Error	170.952	57	2.999			
Total	3622.000	60				
Corrected Total	306.733	59				

Note. R Squared = .443 (Adjusted R Squared = .423)

The efficiency of two distinct instructional strategies intended to enhance students' deep learning was compared with a one-way between groups analysis of covariance (ANCOVA). Scores on the deep learning were the dependent variable, while the teaching methods (traditional and flipped classroom strategies) were the independent variable. Following the conclusion of the intervention, a test was administered. The covariate in this study was the participants' pre-intervention administration scores on the pre-deep learning score.

To make sure the expectations of familiarity, linearity, and equality of variance, as well as the homogeneity of the regression slope and precise amount of the covariate, were not broken, primary tests were implemented. Following the adjustment of the pre-deep learning score, the two intervention groups' post-intervention scores for deep learning of students showed a significant variance (F (1,57) = 41.11, p=.000, partial eta squared=.419). A significant association between the students' pre-test and post-test results on deep learning was demonstrated by the partial eta squared value of.443.

Findings

A significant change was detected between the experimental and control groups in their post-test scores related to deep learning. The results specified that students of the flipped classroom group outpaced their peers in the traditional instruction group. Furthermore, a statistically significant variance was found between the two groups across all sub-components of deep learning: understanding the questions, summarizing the learning, and connecting new knowledge with prior knowledge. This means the flipped classroom technique positively supported English learners at the secondary level in thinking and understanding English materials.

Conclusions

The research was guided by the assumption that flipping the classroom does not help secondary students learn in-depth. According to the analysis, the mean scores for both groups were seen to be notably different. Because these results disagreed with the null hypothesis, the null hypothesis was rejected. They found that using a flipped classroom helped improve how students engaged their mind and learned deeply. Students of the experimental group did better than the control group. They specially made significant gains in memory such as figuring out questions, encoding learning concepts and relating what they are learning to their past knowledge. It was therefore found that using flipped classroom strategies helps secondary school students more effectively learn important concepts.

Discussion

The research found that using a flipped classroom approach greatly helped secondary school students in English classes learn more deeply. Students using flipped classroom strategies did better in all aspects of deep learning than the students in the control group such as understanding questions, summarizing and connecting new learning to things they already knew. As a result, flipped classes appear to increase engagement and mental activity for students than classes where the teacher is the main focus.

The findings are consistent with those from earlier research which found that flipped classrooms are good for promoting active learning, letting students take charge and teaching higher-order skills (Lo & Hew, 2017; O'Flaherty & Phillips, 2015). The model makes it possible for students to learn individual instructional lessons remotely, so teacher time and classroom sessions are saved for group cooperative activities. Having this structure motivates learners to examine information carefully instead of just getting it passively. According to Biggs and Tang (2011), these findings agree with their theory since it highlights the importance of understanding concepts and connecting knowledge.

It was found that the learning style especially strengthens English Language teaching. Being able to use language means learning vocabulary, grammar, but also gaining better interpretation, analysis and reflection skills. Flipped learning gives students the opportunity to think deeply about texts, discuss their ideas and then express themselves in ways that grow their thinking skills.

Recommendations

1) They should begin to use flipped classroom strategies in how English is taught. It has been demonstrated that the strategy results in more involved thinking and helps students better grasp, summarize and link information with things they have learned before.

2) Using flipped classrooms means teachers needs to have the skills needed to design lessons, make instructional videos and understand how to use resources for education. Teachers need to be updated through training and support offered by school administrators.
3) To fully use flipped learning, students must regularly be able to use digital devices and the internet outside the classroom. Policymakers and school authorities are advised to fill the digital divide by offering both technology and different learning options for students without easy access to technology.
4) Further studies are needed in various subjects, at all grade levels and in different areas to determine if flipped classroom strategies really improve learning, motivation and academic results.

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