

EFFECT OF FLIPPED TEACHING ON THE ACADEMIC ACHIEVEMENT OF SECONDARY LEVEL STUDENTS IN ENGLISH

By

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NATIONAL UNIVERSITY OF MODERN LANGUAGES,

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ENGLISH**

By

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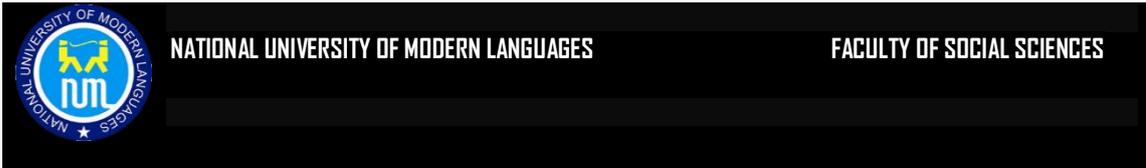
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ABSTRACT

Thesis Title: Effect of Flipped Teaching on the Academic Achievement of Secondary Level Students in English

The main aim of the research was to examine the effect of flipped teaching on the academic achievement of secondary level students in English. The study was based on the following objectives: 1) to find out the effect of flipped teaching on the academic performance of secondary level male and female students, 2) to examine the effect of flipped teaching on the academic achievement of secondary level high achiever, average achiever and low achiever male and female students 3) to investigate the effect of flipped teaching on the academic achievement of male and female students in perspective of test items based on Bloom Taxonomy, 4) to find out the effect of flipped teaching on the retention of secondary level male and female students, 5) to examine effect of flipped teaching on retention of secondary level male and female high achiever, average achiever and low achiever students, 6) to investigate the effect of flipped teaching on retention of secondary level male and female students in perspective of test items based on Bloom Taxonomy. Experimental study was conducted. Two parallel experiments for male and female students were arranged. Duration of experiment was eight weeks. Pre-test, post-test and retention test were used as research tools. It was concluded that both male and female students of experimental group who were taught through flipped teaching performed better as compared to students of traditional method. High achiever, average achiever and low achiever male as well as female students secured more marks on posttest and significant effect of flipped teaching was shown on academic achievement of students. Retention of students taught by flipped teaching was also better as compared to students of traditional teaching group. It indicated that there was significant effect of flipped teaching on retention of students. Findings indicated that flipped teaching method had positive effect on academic achievement of male and female students. Therefore, it is recommended for teachers to use flipped teaching method in secondary level English class.

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LIST OF ABBREVIATIONS

Contrl.	Control Group
df	Degree of freedom
Exp.	Experimental Group
F C	Flipped Classroom
F L	Flipped learning
FLN	Flipped Learning Network
F T	Flipped teaching
GTM	Grammar Translation Method
NGO	Non-governmental organization
STEM	Science Technology Engineering & Mathematics
TC	Traditional Classroom

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Syeda Tasneem Zahra

Dedicated
to
My beloved
and
enchanting Parents

Whose candid prayers and noble inspirational love as cavernous as sea, as benevolent and pure as clear lily, whose guidance, motivation, welcoming attitude, sacrifices as cherished as the most expensive diamonds, have always changed my dreams into reality and prepared me as a scholar personality what I am today

CHAPTER 1

INTRODUCTION

It is no longer a mere rhetorical statement, but a well-established fact and a time-tested reality that quality of life of the nations is shaped in the classrooms. Teacher is the pivot of all process of education and he/she serves as the sublime and prime leader of the teaching learning process. An ideal and inspirational teacher always alters his/her methods of teaching as per demands of lessons as well as time. With the passage of time, there has been continuously shift towards innovative methods of teaching. The utilization of technology has become increasingly prominent in recent years, particularly in various educational courses. The popularity of using modern technology and multimedia techniques in the classroom is steadily increasing. Modern technology is readily available to every student. The multimedia holds a great fascination for students. In today's age, it is imperative for teachers to elevate their teaching methods by integrating modern technology. Apart from use of technology, in most of innovative approaches, a rising trend of shift of learners from passive learners to active learners has been initiated. Among those innovative method of teaching which result in student's position as active learner, "Flipped teaching" enhances learner's active engagement in class. In developed countries, flipped teaching has been adapted by majority of teachers in recent years.

According to Hamdan et al., (2013), in many countries, there is much rise in popularity of flipped teaching and is widely acknowledged as an innovative and vital teaching strategy within the education sector. Flipped learning necessitates and mandates pedagogical approaches that enable students to grasp course materials typically taught in traditional classroom lectures before attending class. This is facilitated through the utilization of technology, which includes videos but is not limited to technology or videos. Written material, such as notes, related documents, and printed power point presentations, can also fulfill this purpose. During class time, students are actively engaged in a variety of active learning activities. Additionally, teachers provide individually targeted feedback to enhance their learning experience. According to Fulton (2012 a), flipped teaching is an instructional method in which direct

instruction moves from a group learning environment to an individual learning environment. In this way the group space is transformed into a dynamic, and interactive learning environment where teacher guides students as they apply concepts and engage actively and creatively with the subject matter. The term “flipped teaching” also refers to other these methods such as: flipped learning and flipped classroom. The pedagogical approach known as flipped learning has gained immense popularity in recent times. It involves reversing the traditional elements of a course, such as lectures and homework. Flipped learning turns classrooms into lively, exciting and engaging spaces, where the teacher takes on the role of a guide, supporting and nurturing students’ growth.

1.1 Background of Flipped Teaching

The concept of Flipped Teaching can be traced back to the philosophical teachings of Socrates. However, in a formal manner, this term was employed in the year 2004. In 2004, flipped teaching started gaining popularity as a means to deliver instruction to students who were unable to attend physical classroom sessions for different reasons (Bergmann and Sams, 2012; Musallam, 2010). In the field of secondary education in the United States, the concept of flipped classroom gained popularity with its introduction by Bergmann and Sams in 2008. This approach involved students engaging in various activities during class, such as working on Mathematics problems individually. As part of their homework, they were assigned pre-recorded multimedia lectures, notes and study materials to watch videos and read notes or study materials at their convenience beyond the classroom setting. During class, teachers either provided individual assistance to students or involved them in group projects (Prober and Heath, 2012).

The regular classroom teaching was recorded and made accessible for students to watch outside of class as their homework, while homework was done during class hours. This new teaching method has emerged, named as flipped teaching, where the fundamental knowledge of a lesson is shared with students outside the classroom, which allows more time during class to delve deeper into the subject matter, apply the concepts, and foster the development of critical thinking skills. During class, teacher discusses all necessary explanations and details of the lesson. And outside the class,

this method prepares students to study at home for the next coming lecture (Musallam, 2010).

1.2 Traditional Method of Teaching English

According to Waseem (2012) traditional method of teaching English is also known as Grammar Translation Method (GTM). This approach teaches reading skills, learning to write to aid understanding grammar comprehension, and general writing and vocabulary. The central emphasis lies on the areas of reading, writing, translation, and grammar. The traditional method has been widely employed for teaching old classical languages like Greek and Latin in the Western world, as well as Arabic and Persian in the Eastern world. Among language teachers and students, this method is considered the most popular. On the other hand, the key criticism against this approach is its neglect of students' listening and speaking abilities.

1.3 Revised Taxonomy of Bloom and Its Importance

In the year 1956, Bloom and his associates published the original Bloom's Taxonomy, as stated by Anderson (2002). The classification of educational goals, objectives, and standards is encompassed within this taxonomy. The Cognitive Domain was comprised of six categories, which progressed from basic to advanced and from tangible to conceptual. These categories included: knowledge, comprehension, application, analysis, synthesis, and evaluation. The initial version of Bloom's Taxonomy presents a spectrum stretching from basic cognitive abilities to more advanced cognitive abilities. The text was organized in an ascending order, from lower order to higher order, with each category being described as a noun. The framework known as Bloom's revised taxonomy assists teachers in identifying their desired learning outcomes for students through instruction. According to Anderson et al. (2001) it was suggested that the Revised Bloom's Taxonomy presented a cumulative and improved hierarchy. This means that in order to achieve a more advanced skill or ability, one must first achieve the prior one. The revised lower-level learning domains encompass remembering and understanding, whereas the revised higher learning domains involve applying, analyzing, evaluating, and creating.

1.4 English as an Important Subject in Pakistan

The researcher selected the subject of English because of the most important reasons. One was that no study on English subject with respect to flipped teaching was conducted so far and secondly English has unique important position at school and college level in Pakistan. Importance of teaching English is very imperative and it cannot be minimized. The division of modern knowledge into various subjects necessitates the study of the English language. This is due to several reasons. Firstly, English serves as the language of science and technology, making it indispensable for progress in these fields. Secondly, it acts as the global means of communication, enabling us to engage with the international community. Thirdly, it serves as the language of world literature, allowing us to comprehend the diverse cultures of other nations. Moreover, it is the language of ambassadors of the world, essential for expression on the global stage. United Nations as well as International Court also possess English as official language. It further emphasizes its significance. By encapsulating the finest ideas and writings from around the world, English embodies the essence of human thought. Just as knowledge empowers, English holds immense power in today's world. Due to its importance and utility, it would be detrimental to give less value to English and neglect English as a compulsory subject up to secondary or college level or optional subject or restrain its significance just to classroom in our education system. Instead, it should be standardized and encouraged at all educational levels and practical fields throughout the country (Tanveer, 2012).

According to Tahir (2014), "The importance of English language cannot be overstated, as it is widely recognized as a global language. The language of modern science and technology is what it embodies. In today's era, it has become imperative to prioritize this requirement. In our country, students' failure in English is due to futile methods of English teaching and non-conducive environment of classrooms for English teaching. Although English may be classified as a foreign language, its significance transcends national boundaries. Today, it is widely regarded as the universal language, known as the "lingua franca," spoken and understood across every corner of the globe. English is undoubtedly the language that dominates the field of science and technology. English provides an unparalleled range of possibilities for scientific studies and research, surpassing any other language. The plethora of knowledge it provides

encompasses all the social sciences, offering us treasures waiting to be discovered. It serves as the universal language of literature, granting us insights into the cultures of diverse nations.” Due to importance of English in worldwide and Pakistan, the researcher selected the subject of English.

1.5 Rationale of the Study

Quality of education depends mostly on effective teaching. Effective teaching is the heart and soul of educational process. There are different innovative methods of teaching among which flipped teaching holds the unique and vital position. The concept of “flipped teaching” and “flipped classroom” is a modern educational approach that has gained significant popularity. In this method, teachers invert the traditional roles of school work and homework by providing video lectures, notes, and materials for students to review before attending class. During class time, students engage in homework activities with the guidance of the teacher. The objective of this study was to contribute to the existing knowledge and gather data on the effectiveness of the flipped classroom in enhancing English language learning among high school students.

Secondary education holds pivot position in system of education of Pakistan. English being international language and language of all modern fields of study, medicine, engineering, technology also hold vital position as a subject at all levels especially at secondary school level. There have been shift towards innovative methods of teaching from traditional methods of teaching. Among these innovative methods, flipped teaching has gained much popularity. The rise in accessibility of online resources and the recognition of the importance of students’ active interaction in the learning process have led to the emergence of flipped teaching. This pedagogical approach is particularly advantageous as it caters to demands of the diverse learning styles of individual students, a characteristic that is often overlooked in traditional classroom settings. While there exists a substantial body of research on flipped teaching, but there is a lack of research on investigating its impact on the academic performance of English. This research gap prompted the selection of this particular area of study. Due to dearth of researches on this perspective i.e. effectiveness of flipped method with respect to academic performance of students in the world and especially in Pakistan no study has been executed so far on this topic, therefore, the researcher

selected this topic for research based on this need assessment to examine the effectiveness of flipped teaching in raising academic performance of students as clear and vast evidence manifests that there has been minimal research conducted to ascertain the efficacy of flipped teaching in enhancing students' performance, particularly in the context of high school education in Pakistan. Only two studies at Ph.D. level had been conducted on flipped teaching in Pakistan but their focus was on trainee teachers. Minaz (2018) conducted a study on "Effect of Flipped Classroom Strategy on the Performance of Prospective Teachers of Khyber Pakhtunkhwa". Tufail (2020) conducted a study "Effectiveness of Flipped Classroom Instruction for Nurturing Prospective Teachers' Reflective Thinking Skills." The focus of this study was to investigate the comparative effectiveness of flipped teaching and traditional teaching with respect to teaching of English at secondary school level in Pakistan. This study was an attempt to contribute to an emerging line of research around flipped teaching realm. As teachers begin to eschew the traditional lecture set-up as the preferred teaching method, a variety of reasons are appearing in the literature and research regarding why flipped classrooms are comparatively a better approach. These reasons primarily include lessening educational bulimia, inspiring and boosting personal liability, and enhancing students' conceptual learning.

1.6 Statement of Problem

The flipped classroom is considered an innovative approach in the educational setting that holds great potential and promise in the contemporary era. In flipped teaching, there is no traditional homework. Videos, notes and material are given to students to learn from home as it will be taught in class on the next day. Students' role is as active learners in classroom. During class time, students actively participate in learning activities and receive personalized feedback and guidance from their teachers. Teachers clarify and explain the concepts which are not understood by students at home. Numerous studies have been conducted on the flipped method but there is lack of research on effect of flipped method on academic achievement of students across various subjects. This research problem regarding effect of flipped teaching on academic achievement of secondary level students in the subject of English was selected by the researcher. Therefore, the main problem under investigation was to examine comparative effectiveness of flipped teaching method in comparison with the

traditional teaching method of English i.e. Grammar Translation Method (GTM) in enhancing students' academic achievement.

1.7 Objectives

The study was based on the following objectives:

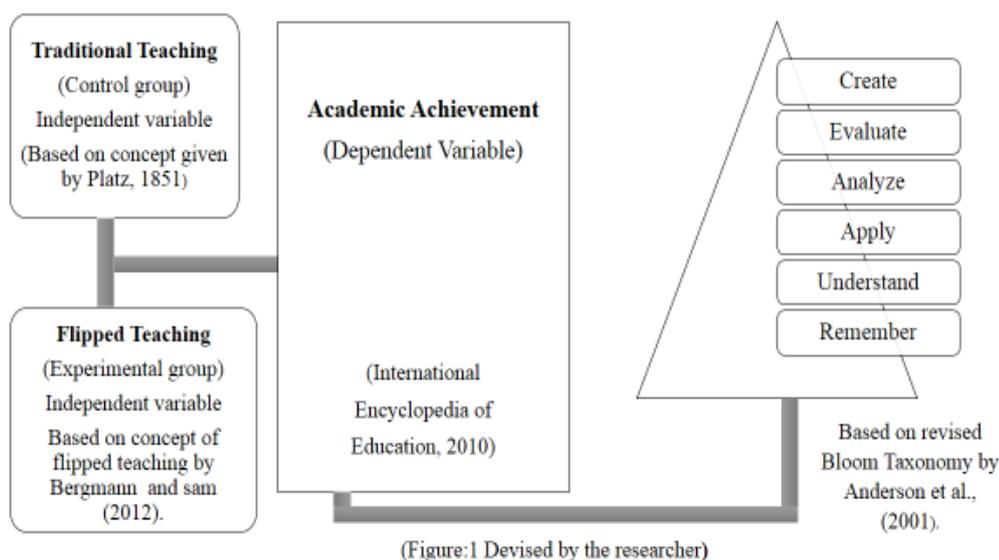
1. To find out the effect of flipped teaching on the academic performance of secondary level male and female students.
2. To examine the effect of flipped teaching on the academic achievement of secondary level high achiever, average achiever and low achiever male and female students.
3. To investigate the effect of flipped teaching on the academic achievement of male and female students in perspective of test items based on Bloom Taxonomy.
4. To find out the effect of flipped teaching on the retention of secondary level male and female students.
5. To examine effect of flipped teaching on retention of secondary level male and female high achiever, average achiever and low achiever students.
6. To investigate the effect of flipped teaching on retention of secondary level male and female students in perspective of test items based on Bloom Taxonomy.

1.8 Conceptual Framework

The study's conceptual framework had its base on four major components. There were two teaching methods flipped teaching method and traditional teaching method. The effect of these two methods was examined on general academic achievement of students as well as in perspective of test items based on Bloom's Taxonomy. The study focused on two independent variables and one dependent variable. Two methods of teaching, teaching method and traditional teaching method served as independent variables and academic achievement served as dependent variable of this research. Academic achievement was also examined on six levels of

revised Bloom Taxonomy. The tool used by researcher was test for data collection and test items were based on six levels of this taxonomy.

The detailed description of the conceptual framework is that in this proposed research, there were three main variables. Two were independent variables and one was dependent variable. Independent variables were two methods of teaching: traditional and flipped method. First independent variable was traditional teaching method of English. Platz (1851) was main proponent of this method. Second independent variable was flipped teaching method. Alvarez (2012) was main proponent of this method. Effectiveness of these methods was comparatively examined. Dependent variable was academic achievement of students. Academic achievement was also examined on test items based on six levels of revised Bloom Taxonomy which was given by Anderson et al., in 2001. Two parallel experiments for male and female students at the same time in same days in same school were conducted. These were done on male and female students. The researcher examined the effect of traditional teaching method and flipped based teaching on the academic achievement performance of secondary level students in the subject of English.



(Figure. 1.1. Proposed and developed by the researcher)

1.9 Hypotheses

To achieve the objectives of study, following null hypotheses were tested:

H₀1a: On posttest achievement scores, no difference will be found in male students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀1b: On posttest achievement scores, no difference will be found in female students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀2a: On posttest achievement scores, no difference will be found in male high achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀2b: On posttest achievement scores, no difference will be found in male high achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀3a: On posttest achievement scores, no difference will be found in male average achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀3b: On posttest achievement scores, no difference will be found in female average achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀4a: On posttest achievement scores, no difference will be found in male low achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀4b: On posttest achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀5a: On retention test achievement scores, no difference will be found in male students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀5b: On retention test achievement scores, no difference will be found in female students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀6a: On retention test, no difference will be found in male high achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀6b: On retention test achievement scores, no difference will be found in female high achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀7a: On retention test achievement scores, no difference will be found in male average achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀7b: On retention test achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀8a: On retention test achievement scores, no difference will be found in male low achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

H₀8b: On retention test achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

1.10 Significance

The researcher focused on the subject of English. English has always been rated high in Pakistan. Because this subject has vital value at elementary, secondary and higher secondary level in Pakistan. Teaching and teaching method serve as an integral components of educational process, which require from teachers to exhibit innovation and creativity to cope with the increasingly complex requirements of modern day knowledge. Successful and effective teachers always change their teaching methods with demands of time. The utilization of traditional teaching method has proven insufficient in bridging this gap, resulting in a decline in our education system, particularly at the secondary level. It is imperative that teaching practices align with the ever-growing complexity of knowledge, as teachers, students, and parents have expressed serious concerns regarding this matter. Therefore, a gradual transition

towards innovative teaching is necessary. The subject of English is no exception to this requirement, demanding a study aimed at encouraging teachers to reconsider their preferred teaching methods. Currently, there is limited empirical evidence to test the theoretical assertion that innovative approaches, such as flipped teaching, significantly impact students' academic achievements. Consequently, this study holds great significance as it has the potential to contribute valuable experiential part of knowledge. There is deficiency of research, in Pakistan on effectiveness of new methods like flipped teaching. As the first study of its kind at secondary level on English subject, this research may suggest new avenues for further exploration in the teaching learning milieu. This comparison is of utmost importance. The findings and conclusions of this study may serve to:

1. Encourage teachers to adopt flipped teaching as a daily and regular instructional approach.
2. Convince educationists, policy makers, administrators, curriculum developers, teachers and master trainers to promote and implement flipped teaching as a fundamental teaching strategy.
3. Assist future researchers in conducting additional studies to investigate the effectiveness of innovative, model-oriented teaching in various subjects, levels, and contexts.
4. Result in enhancing the quality of secondary level teaching of English.

1.11 Research Methodology

Following methods and procedures were adopted.

1.11.1 Research Design

The study was experimental. Pretest posttest equivalent design was adopted. Because it was the most appropriate for requirements of study.

1.11.2 Population of Study

All students of 9th class in Unique Public School Kallar Kahar (District Chakwal) were population of the study. There were 62 male students and 72 female students in Unique Public Secondary School Kallar Kahar (Chakwal).

1.11.3 Sample

Two experiments one for male group and female group were conducted parallel. Sixty 9th grade male students were randomly selected. Further these students were divided in two groups which were flipped teaching group and traditional teaching group on the basis of pretest. Thirty students were in each group. In thirty students, top ten were categorized as high achievers, middle level ten students were named as average achievers and the lowest ten students were categorized as low achievers. Similarly, sixty female students of 9th class were selected randomly and they were divided into two groups which were flipped teaching group and traditional teaching group. Pretest was basis of division. Thirty students were in each group. These two experiments were executed in same school under same environment and same conditions.

1.11.4 Research Instruments

Pre-test, posttest and retention test were used for data collection.

1.11.5 Collection of Data

Data was collected through pretest, posttest and retention test. Pretest was taken before start of experiment. Posttest was taken soon after end of experiment and retention test was taken after three weeks of experiment.

1.11.6 Analysis of Data

T-test (independent) was applied to assess comparative effectiveness of flipped method and traditional method in order to find out effect of flipped strategy on students' academic performance through comparing means in male and female students. To examine level of effect, "Cohen's d" test was used whether effect size was small or it was medium level or it was large.

1.12 Operational Definitions

➤ Flipped Teaching Approach

In flipped teaching, there is not homework like traditional concept of homework. Videos, notes and material are given to students to learn from home as it will be taught in class on the next day. Students' role is as active learners in classroom. Teachers provide timely guidance and feedback to students. Students are engaged in

learning tasks. Actively engagement of students in class time in learning is credit of this method. In flipped method, students' role is highly active.

➤ **Traditional Method**

Grammar Translation Method is regarded as traditional teaching method in Pakistan. It is method of learning English by practice of translating or converting the sentences of the native language into English. Back to back translation and retranslation is focused in traditional method of teaching.

➤ **Secondary Level**

In Pakistan, system of education has three tiers: elementary education, secondary education and higher education. Elementary education consists of 1-8 classes. Secondary education consists of 9-12 classes. Higher education comprises over 12 class. Secondary education has two sub levels: secondary and higher secondary. Secondary is comprised of class 9-10 and higher secondary consisted of class 11-12.

Secondary education level holds vital position in education system of Pakistan. It serves as terminal stage and provides also entrance for higher education. All important fields of study medical, engineering, law, BS, B.Com. BCS, BIT are based on secondary education.

➤ **Academic Achievement**

Marks taken by a student in a subject in a test, in a paper, in a semester, in an annual examination is referred to as academic achievement of that student.

CHAPTER 2

REVIEW OF RELATED LITERATURE

In this section, the researcher conceptualized the main concept of Flipped teaching method, Bloom's Taxonomy, Traditional teaching method, and review of related previous studies on flipped teaching.

2.1 Historical Background of Flipped Teaching

According to Baker (2000) and Strayer (2007), the concept of flipping the classrooms, also referred to as inverting classrooms, is not a totally new and recent concept. According to Peterson (2011), Socrates advocated for the significance of active dialogue in process of learning. Its purpose was for students to read beforehand which will be topic of teaching next day in order to prepare them for class and engage in discussions during class time. Over the course of centuries, people have been practicing this concept without giving it a specific technical name. Although the origins of Flipped Teaching can be traced all the way back to the time of Socrates. However, what was being practiced was not genuine concept and term which is Flipped Teaching. The inception of the flipped classroom concept in the United States can be attributed to Professor Erik Mazur's pioneering efforts at Harvard University. In his early work from 1991, Mazur enabled students to assume control over their learning by utilizing text files and problem solutions to determine the content and pace of their educational journey. In 1996, the emergence of online content management systems prompted Wesley Baker, a lecturer at Cedarville University, to adopt innovative methods of teaching in a small private college in Ohio. He started sharing lecture notes online, facilitating extended classroom discussions, and administering online quizzes to engage students (Strayer, 2007). Rather than having students simply copy notes, class time was utilized for the practical application of new concepts and knowledge, along with the completion of quizzes. During the years 1996 to 1998, Baker (2000) explained that idea of "The Inverted Classroom" was presented at various conferences. But it was not genuine sense the original flipped method. It was just introductory idea given by Baker in 2000. Baker (2000) coined this term and developed his concept around four fundamental principles: "clarifying, expanding, applying, and practicing".

In the year 2000, the article on inverting the classroom was published by university teachers Lage et al., (2000) at Miami University. The research conducted by Lage et al. (2000) found that students, in general, displayed a preference for the inverted classroom over the traditional lecture approach. Additionally, they expressed a desire to continue taking economics classes in the same format of inverting class. They assigned to their students the task of watching video lectures and reading notes before class, just like Baker's given concept of flipped classroom. According to Lage et al. (2000), following this technique, they provided explanations for complex ideas and concepts to their students one day before actual class. The students then engaged in group work and applied the knowledge they had acquired in a collaborative manner. In 2007, the actual method of flipped teaching was developed by Bergmann and Sams, science teachers who are frequently recognized for utilizing lecture videos to students who cannot attend classes and then after some time use of these videos before face to face class (Li, 2016). In preparation for class, Johnson and Renner (2012) provided the students with notes, material for reading, videos of lectures, and printed slides. According to Ageirman and Ercoskan, (2022) flipped teaching was devised by Bergann and Sams. As a solution to aid students who had missed their lectures, ever since then, the flipped model has gained widespread interest, with a constant influx of new articles, press coverage, and blogs discussing its implementation (Moran and Young, 2014). It seems like almost every day there is something new and exciting to read about the flipped model. This resulted in a completely new perspective on education. During that period, teachers interested in flipped education came together to create a professional learning network. In 2013, the network boasted a global membership of over 17,500 individuals, offering pedagogical insights and fostering constructive discussions on best practices (Overmyer, 2013).

2.2 Theoretical Background of Flipped Teaching

The flipped teaching is heavily influenced by the constructivist theory of learning. This theory suggests that construction and understanding of knowledge is done by individuals through experiences and interactions with the world around them. Students are provided with opportunity to engage with the material outside of the classroom, allowing them to construct their own understanding before coming to class and engaging in discussions and activities that further deepen their understanding in

flipped teaching. Flipped teaching also aligns with the concept of self-directed learning, where students take responsibility for their own learning and are actively involved in the learning process. By providing students with pre-recorded lectures or readings to engage with outside of class, they are able to take control of their learning and work at their own pace. This promotes student autonomy and allows for a more personalized learning experience (Strayer, 2007). Its theoretical foundation on constructivism substantiates the importance of differentiated instruction. Differentiated instruction is the vital element of constructivist theory. Differentiated instruction is one of the cores of constructivism. It is a teaching approach that recognizes and imply to accommodate the varied and manifold and diverse learning necessities and needs of students. In a flipped classroom, students are able to engage with the material in a way that best suits their learning style and needs. This individualized instruction allows for a more inclusive learning environment and can lead to improved academic outcomes for students. Mastery learning is a teaching strategy where students are given the opportunity to master a concept before moving on to the next one. In a flipped classroom, students are able to engage with the material outside of class, allowing them to work at their own pace and ensuring that they have a solid understanding of the material before moving on. This approach promotes deeper learning and can lead to improved retention of information. The flipped classroom model is a teaching method that is rooted in these educational theories and concepts: constructivism, self-directed learning, differentiated instruction, and mastery learning. By incorporating elements of constructivism, self-directed learning, differentiated instruction, and mastery learning, flipped teaching promotes student autonomy and individualized instruction. This approach to teaching has shown promising results in improving student engagement and academic outcomes. As technology continues to advance, the flipped classroom model is likely to become even more prevalent in education (Kaviani et al., 2018).

2.3 Flipped Teaching: Definitional and Conceptual Details

In 2000, Lage et al. coined the term “flipped classroom” to refer to the phenomenon where activities traditionally held within the classroom are now conducted outside, while activities that traditionally occurred outside the classroom now take place within its walls. In simpler terms, students complete their school assignments at home, while they work on their homework at school. According to Novak, (2011), in the

literature, various terms have emerged over the last decade to describe a method or approach that focuses on student preparation before class. These terms include inverted classroom. Flipped classroom as expressed by Bergmann and Sams, (2012) and Davies et al., (2014) is inverted type of learning that expresses the student's preparation before the lesson, is described in the literature.

After conducting a review of the pertinent literature, it is evident that the terms "flipped classroom" or "flipped learning" have been defined in varied manners.

Kim et al. (2014) discussed flipped teaching as an open approach to enhance student-teacher interaction and promote individualized learning by flipping traditional events both inside and outside the classroom. This approach is supported by videos, notes, material given to students as home work. Students watch videos and read notes prior to the next actual class. According to Bergmann and Sams (2012), it is beneficial to assign students pre-class activities containing the lecture material in order to free up class time for interactive discussions, hands-on learning, practice, and practical application of the new knowledge. According to Slomanson (2014), the teacher delivers the lecture which is in recorded form watched by students at home, and the students complete their homework in class.

In Brame's study in 2013, it was observed that students are exposed to fresh material by means of reading or watching lecture videos outside of class at home. These are given to students by teacher before the next day class. In the classroom, students are subsequently offered the chance to partake in more demanding activities like problem-solving or joining discussions to enhance their comprehension of the subject matter. The flipped classroom is a teaching and learning technique that involves students gaining knowledge outside of the classroom through instructional videos and then utilizing that knowledge in activities that foster advanced thinking and problem-solving. Bergmann and Sams (2012) proposed an alternative approach to traditional classroom teaching by suggesting the use of lecture materials, such as audio or video podcasts, as substitutes for in-class lectures. This was actual start of flipped teaching. According to Moroney (2013), the teacher has the option to either create their own videos or utilize videos that are accessible on YouTube. The students are expected to engage in a comprehensive preparation routine, which includes watching videos,

listening to audio, reading relevant texts, and employing various study techniques, all before stepping into the classroom instead of passively listening to lectures. They engage in discussions, group work, hands-on experiments, and problem-solving tasks. This active approach to learning fosters greater understanding, critical thinking skills, and retention of information. Additionally, students have the opportunity to collaborate, communicate, and learn from their peers, enhancing their social and interpersonal skills. The classroom environment becomes a dynamic and interactive space, where students become active participants in their own education. Smart and Csapo (2007) highlighted importance of engaging students in learning. Missildine, et al., (2013) discovered valuable strategies that assist individuals in implementing their knowledge and cultivating advanced cognitive abilities. Roehl et al., (2013) explained that active learning involves interactive and experiential activities, where students participate in learning by discussing what they have watched, practicing their understanding, and applying the concepts they have been taught.

The flipped classroom is a method of teaching that deviates from the traditional approach by utilizing online videos, notes, or written power point presentations to deliver instructional content. This innovative technique falls under the umbrella of blended learning, combining online resources with classroom instruction. Incorporating flipped teaching into the classroom enables the utilization of activities that promote higher-order thinking skills. In contrast to traditional teaching methods where such activities are usually assigned as homework, flipped teaching brings them directly into the classroom environment. Students in a flipped classroom frequently engage in collaborative work within small groups under the mentorship and supervision of their teacher. The potential benefits of a flipped classroom include increased student engagement and improved social interaction within the classroom. This is achieved through the guidance of the teacher or small group work facilitated by the teacher. The flipped classroom model consists of two main components: online video lectures or notes for distance learning, and in-person activities during class time. It is worth noting that some researchers and writers do not consider pre-class text-reading as part of the flipped classroom approach (Bishop and Verleger, 2013). According to Chen et al., (2016) a key aspect of the flipped classroom is the active involvement of students in the teaching and learning process. According to Clark (2015) and Gilboy et al., (2015)

by shifting from a teacher focused to students focused methodology and the flipped promotes greater engagement among students. It also encourages independent learning through small-group work.

2.4 Principles of the Flipped Teaching

Baepler et al. (2014) and Davies et al. (2013) elucidated the fundamental principles of flipped teaching. This instructional approach, known as flipped learning, aims to optimize the utilization of class time by transforming the traditional roles of teachers and students both inside and outside the classroom. In the context of flipped learning, students transition from being passive recipients of lectures to active participants in classroom activities. Prior to attending class, students are expected to engage with pre-recorded lecture videos or study materials provided by the teacher. This shift in pedagogy involves moving the presentation or lecture component, traditionally delivered in the classroom, to a pre-class assignment. By doing so, students are afforded the opportunity to review the videos at their own pace, pausing to take notes or revisit important points. During in-person class sessions, students engage in active learning through group work or individual study.

In a similar manner, O’Flaherty and Philips (2015) explored the principles of flipped teaching. They emphasized the crucial role of the teacher in providing personalized assistance and feedback to students. This individualized support allows students to further practice and consolidate their understanding of the subject matter. The presence of the teacher ensures that students receive guidance and assistance whenever they encounter confusion or difficulties.

2.5 Key Characteristics of a Flipped Classroom

The flipped classroom encompasses various models; however, it’s important to note that not all instructional approaches are identical. It is important to acknowledge that there is no one-size-fits-all method for implementing a flipped classroom. In fact, they argue that the notion of a “flipped classroom” is not a rigid and fixed concept. To participate effectively in flipped learning for students, it is essential for teachers to integrate four key components into their teaching practice. These components, referred

to as the “F-L-I-P” pillars, comprise of a Flexible Environment, Learning Environment, Intentional Content and Professional Educators (Bergman and Sams, 2015).

One key aspect of a flexible learning environment is the ability for students to learn in their own unique style, while teachers have the freedom to instruct in various ways. According to Wu et al. (2017), in a traditional classroom setting, students are taught new knowledge through lectures, and then they reinforce and practice that knowledge at home through homework assignments. On one hand, the paradigm is reversed in flipped classroom learning. Instead of the traditional approach where information is taught in class, students are now introduced to the materials beforehand through lecture videos. These videos can be watched at their own pace and in a location that suits them, outside the classroom. In order to provide opportunities for interaction and reflection, teachers design their classroom spaces to be flexible. Contrarily, in the classroom, students are bestowed with the liberty to engage in writing, creation, or communication, whether individually or in a collective manner. Students have the freedom to choose the time and location that suits them best for their learning experience. Moreover, they can select the learning method that appeals to them, whether it is working in groups, studying independently, conducting research, or engaging in performance-based activities.

Flexible learning and teaching revolves around providing students with personalized learning experiences, allowing them to explore various learning avenues either independently beyond the classroom or alongside their teacher and peers in a collaborative environment. Flipped classroom learning offers students the opportunity to have more control over their education, allowing them to choose their own pace, location, and learning method. This approach also empowers students to design their own unique learning pathway (Gordon, 2014).

According to Hamdan et al., (2014), the evaluation of students’ learning and their timelines for learning can also be characterized by flexibility. Hence, the flipped classroom method boosts the individual learning pace and offers optimum learning opportunities for L2 students with low proficiency. Additionally, the learning culture illustrates a transition where students are no longer just passive recipients of teaching, but rather the focal point of the learning process. According to King (2019), the teacher

is considered the primary source of information in a traditional teacher-centered model, often portrayed as the wise and knowledgeable figure on stage. This implies that the teacher is the sole authority when it comes to delivering information to students, typically through direct instruction lectures. But in modern methods teachers' role is not as much active.

The use of a flipped learning model involves deliberately transitioning to students as central figure of class from teacher as central figure of class. In this approach, the teacher's role is transformed from being the primary provider of information to that of a facilitator. During class activities, teachers play the important role of supervising, guiding, and creating meaningful exercises, while also providing students with opportunities to construct their own knowledge. According to Prince (2004), active learning can be described as students engaging in meaningful learning and actively reflecting on their actions. In such a way of writing, student-centered active learning environments occur when students participate in teacher-guided activities that foster learning. In the research conducted by Baeten et al., (2010), it is evident that a student-centered learning approach and a deep learning approach are interconnected and can yield numerous advantages. In a student-centered learning environment, one advantage is that students who have achieved deep learning can incorporate it into their repertoire. This enables them to enhance their proficiency by applying their knowledge and understanding to new situations, as explained by Hattie and Donoghue (2016).

In a flipped learning setting, the classroom culture transitions from being centered round the teacher to becoming focused on the students. Student centered learning is one of the main feature of this approach. This change allows students to have additional in-class time to delve deeper into subjects and make the most of learning opportunities, ultimately leading to greater achievement in their education. Additionally, intentional content refers to the strategic choices made by teachers. They begin by pinpointing essential learning materials and subsequently determine which ones to present in in-person sessions or pre-recorded video lectures. Furthermore, they also identify supplementary resources for students to learn before school class.

According to Edwards et al. (2014), the flipped classroom approach encourages students to learn outside of the traditional classroom setting, at any time and in any place. Students have the freedom to select and employ the most beneficial study strategy as they navigate through the instructional material at their own speed. In a study conducted by Hung in 2015, it was shown that students experienced a positive change in their participation, satisfaction, and performance after engaging in this specific pedagogical approach.

According to McLaughlin et al. (2014), there has been an increase in the awareness of teachers regarding teaching strategies when it comes to using the flipped classroom approach. According to Kong (2014), teachers in the flipped classroom model not only enhance their resources but also engage in reflective discussions and exchange instructional practices. According to Hamdan et al., (2014), teachers who grip flipped learning utilize various instructional methods, such as peer instruction, active-learning strategies, problem-based learning, or the Socratic Method, in order to optimize classroom learning time. These methods are carefully chosen based on the grade level and subject matter being taught. In order to enrich learners' knowledge or enhance their skills in a specific subject, teachers must meticulously choose and assess the learning content. They should determine what needs to be explicitly taught and made available for self-learning through videos, and what should be collaboratively constructed and supported within the classroom environment instead. In a flipped writing classroom, the writing teacher must make choices about the genre to be taught through lecture videos. Additionally, they must select appropriate writing activities for students to participate in during classroom sessions. These activities aim to enhance their skills and comprehension of effectively producing the genre in various situations. Generating new knowledge from the learning content is not only important for a pre-university student, but also crucial. Understanding the content is necessary, but the ability to create new knowledge is paramount. In a flipped classroom, the teachers play a crucial role by determining when and how to transition from teaching the entire class to focusing on each individual student. Writing skill can be effectively taught by flipped method. Students can practice more and more at home before actual class.

According to Ericsson et al., (2017), the most effective way for learners to develop mastery is through the continuous revision of their writing or ideas, guided by

immediate and focused feedback from their teacher. This highlights the fact that teachers have the duty to not just provide traditional lessons and video lectures, but also to come up with impactful learning activities that can engage students and enhance their comprehension of a concept in the classroom. Teachers during class time are responsible for observing students' learning, providing feedback, and evaluating their progress. It is imperative to provide a prompt response to students within the scaffolding system in a flipped classroom.

According to Guskey (2007), revision is essential for achieving mastery in learning, and it relies greatly on receiving prompt corrective feedback from teachers. In the realm of writing, prompt and timely feedback enhances the learning experience for students, whereas delayed feedback diminishes its advantage (Kulik and Kulik, 2012). According to O'Flaherty and Phillips (2015), professional teachers who can provide valuable and immediate feedback to their students are crucial for the implementation of flipped learning. In general, the concept of the flipped classroom can be broken down into two main components. Firstly, there are interactive group learning activities that take place within the classroom. Secondly, there is direct individual instruction using computer-based methods outside of the traditional classroom setting (Bishop and Verleger, 2013). Various technologies and methods are used by teachers in a flipped classroom to transition direct learning from a large group setting in the classroom to individual learning outside of it. In order to enhance student preparation, teachers often produce instructional videos discussing key concepts and provide students with accessibility to these learning resources (Musallam, 2010).

Different researchers have presented different interpretations of Flipped Teaching. This innovative teaching approach emphasizes the exchange of activities that traditionally took place in the classroom with activities that take place beyond four walls of classroom. Homework is not given but videos and study notes are given to students which they watch or study from home. In classroom, teacher discusses all necessary details about the lesson and students are actively engaged in discussions and activities. Although the term "inverted classroom" is not as commonly used as the well-known "Flipped Classroom," it was their direct definition of 'flipping' the classroom that continues to be widely used in many research studies to this day. The text marked

the beginning of a journey to present teachers with a fresh perspective on organizing their classes and lectures (Lage et al., 2000).

The prevalence of internet-based technologies and applications has significantly increased in various aspects of our daily routines. Today's learners are presented with various technologies that offer not only similar content as traditional methods resources but also additional interactive features, thereby providing unique learning opportunities. In the realm of education, the innovative notion of a flipped classroom revolutionizes the conventional approach by relocating traditional lectures outside the four walls of the classroom. This transformative method involves replacing mundane lectures with captivating activities such as vibrant discussions, intriguing case studies, and immersive simulation experiences, encouraging students to delve into these stimulating exercises within the comfort of their own homes. Active learning occurs while using flipped teaching method in the classroom through the teacher's facilitation (See and Conry, 2014). According to Roach (2014), students have the opportunity to watch video lessons online from the comfort of their own homes, thus allowing them to utilize class-time for engaging in various activities. In applications that prioritize interactive content and visuals, students' role is magnificent as compared to traditional teaching in the flipped methodology.

The flipped classroom, a relatively fresh concept in the field of education, was pioneered by Jonathan Bergmann and Aaron Sams in 2007 when they implemented the flipped model in their high school chemistry classes. Although not widely practiced prior to this, certain foundational principles of the flipped classroom had already emerged between the years 1990 and 2000 by Lage, et al., in 2000. Upon flipping their classes, Bergmann and Sams observed an improvement in their students' test scores. Subsequently, they disseminated their findings and established a non-profit organization aimed at supporting other teachers in adopting the flipped classroom approach. Within a short span of time, their website, flippedlearning.org, reported a significant growth, with over 22,500 registered users actively engaging in the practice of flipping their classrooms. Homework in traditional aspect was may be as perceived as burden by students. The task of learning which will be taught further may be a source of attraction for students. This popularity of flipped teaching was due to videos and notes given to students for home and engaging them in class in active activities for

learning. These videos and notes changed the trend of students (Ozdamili and Tavukcui, 2016).

According to Hamdan et al., (2013) this notion of a new educational approach known as the flipped classroom holds its own unique significance. This innovative method replaces conventional direct instruction with video lessons, enabling students to watch and learn at their own pace. Moreover, the flipped classroom fosters student engagement in meaningful learning activities alongside their teachers during classroom time. Despite the limited information available on the flipped classroom, it can be perceived as a personalized form of education where students take responsibility for their own learning. Additionally, the flipped classroom model empowers the teacher to assume the role of a facilitator, promoting heightened engagement and facilitating increased interaction and personal connection between the teacher and the learner. The flipped classroom concept encompasses the integration of problem-based learning within the classroom environment. It entails substituting traditional direct instruction with video lessons, resulting in instructional material that students can conveniently access at their preferred time and location.

Hamdan et al., (2013) further described that there are multiple ways to deliver instruction. One way is by creating narrated screen casts of work and electronically sharing them. Another option is to produce videos of teachers giving lessons. Additionally, related and appropriate video lessons from reliable and internet sources can also be used for instruction. Selection of videos is very important task in flipped method. In 2013, a study on the flipped classroom was carried out by Bishop and Verleger. They were of the view that concept of a flipped classroom comprises two elements: interactive group learning sessions conducted within the classroom and computer-based individual instruction conducted outside the classroom. Furthermore, videos are a crucial element of this instructional technique. Student perceptions of the flipped classroom were discovered to be a combination of both positive and mixed reactions. Students tended to favor interactive in-class activities over lectures, while they showed a preference for shorter videos. Despite students' preference for face-to-face lectures, they found video lectures less favorable.

The flipped classroom, also recognized as a student-centered learning approach, places greater emphasis on the active involvement of students rather than the teacher

during classroom activities. Therefore, through implementing the flipped classroom methodology in educational practices, the teacher can transfer the conventional lecture to a video format, enabling students to access and consume the lectures outside of the classroom setting. The implementation of the flipped classroom model enables students to watch instructional videos at their convenience and pace, fostering collaborative learning in remote education settings. This approach reduces the amount of time spent on lengthy lectures in the classroom, allowing students to engage in problem-solving activities independently or with peers. Additionally, the flipped classroom method promotes the effective use of technology in teaching and learning, as students and lecturers identical utilize various technological tools to enhance the learning experience (Zainuddin & Halili, 2016).

The teaching strategy known as flipping the classroom, also referred to as flipped classroom, flipped learning, or inverted learning, involves reversing the traditional roles of classroom instruction and out-of-class homework. Prior to class, students are provided with instructional materials, typically in the form of a pre-recorded video lecture prepared by the teacher (Overmeyer, 2012). It is expected that students watch these videos at home and take notes, similar to what they would do during a traditional classroom lecture. Armed with a foundational understanding of the content knowledge presented in the video, students then attend class and engage in collaborative activities with the teacher, which traditionally would have been considered as homework. However, it is important for teachers to avoid simply assigning memorization tasks during class time in order to make the most of the flipped classroom approach as explained by Ozdamili and Asilisoy in 2016.

The flipped classroom offers two key advantages in addressing the issue of students encountering difficulties with their homework. Firstly, it allows for more classroom time to be dedicated to in-depth exploration of a particular topic, enabling students to gain a more comprehensive understanding of the content. Secondly, by completing their homework during class, students have immediate access to the teacher's assistance if they encounter any challenges. The teacher can provide support either through group discussions or by addressing individual or small group queries related to the in-class assignments. The teacher has the flexibility to employ various strategies commonly used in traditional classrooms. Consequently, the flipped

classroom approach should not be viewed as a mere replacement for conventional instructional techniques, but rather as a means to optimize the time teachers spend engaging students in higher-level learning, rather than focusing solely on rote memorization (Davies, et al., 2013).

According to Tucker (2012), there had been recently a growing popularity surrounding the concept of the flipped classroom. The fact that the website associated with flipped learning and its network which was a very prominent website solely and it focused on flipped learning, has gained much popularity. The purpose of this website is to serve as a vast forum where members can inquire and provide solutions, exchange video techniques, engage in conversations about their educational encounters, and deliberate on outcomes. From the discussions in the forums, it has become evident that teachers with varying teaching backgrounds, as well as those from different grade levels, socioeconomic statuses, and ethnicities, are actively exploring flipped classroom strategies in order to inspire and educate their students. With the increasing enthusiasm which is surrounding the flipped classroom, it is essential for teachers to ascertain whether students truly grasp and retain information more effectively within this educational setting.

According to Daghan and Akkoyunlu, (2014), the objective of flipped learning is to invert the location where students engage in their higher-order cognitive processes. Flipped learning and instruction are guided by the overall structure of Bloom's taxonomy. Students' cognitive processes and educational pursuits can be classified into two distinct categories according to this framework: lower order thinking skills, which encompass remembering, understanding, and applying, and higher order thinking skills, which involve analyzing, evaluating, and creating. The primary objective of most instructional content is to achieve mastery of lower-order thinking tasks and foundational knowledge, which subsequently facilitates the application of higher order thinking skills in both hypothetical and real-life scenarios.

2.6 Main Four Pillars of Flipped Teaching

The flipped classroom approach is comprised of four essential components that serve as the basic main requirements for effective flipped classroom. These are the

optimal strategies for implementing Flipped Teaching. According to the research conducted by Hamdan et al., in 2013, the flipped classroom was established and primarily based on four fundamental principles. These four major principles are known as the four pillars. Effective and beneficial flipped classroom is mainly standing on these four pillars. Flexible Environment, a Learning Culture, Intentional Content and Professional Teachers are main pillars of flipped classroom. These are pre-requisites for the effective implementation of this method. Upon these blocks, successful flipped technique is devised. The fundamental framework of this approach is formed by them.

2.6.1 A Flexible Environment

Hamdan et al., (2013) were of the view that “Flexible environment is the soul of flipped classroom. It promotes the actual spirit of flipped teaching. Spaces must be flexible. The concept of Flipped Teaching incorporated the utilization of a flexible environment, specifically designed to promote active learning within the physical classroom space. In order to facilitate various educational activities, the space should maintain its flexibility. This flexibility allows teachers to establish small group work stations, individual work areas, as well as quiet corners for one-on-one conversations with students, away from the bustling noise of group activities” Instead of setting up a traditional classroom with fixed rows of desks or immovable tables, teachers and students have the opportunity to create flexible workspaces that can be adjusted as necessary. According to Bergman and Sams (2012): “The classroom side can sometimes be cleared for various purposes such as presentations, whole class mingling, or demonstrations and laboratories. In flipped teaching flexible environment is very necessary. Specific and special design environment in class is required.”

2.6.2 Learning Culture

The learning culture of a flipped classroom is one in which the teacher is comfortable in the back seat and actively helps students learn together, rather than the teacher being “present” lecturing in front of the class (King, 2019). Bergman and Sams, 2012 were of the view that the flipped classroom culture, like other active learning models, asks the teacher to walk around the room to monitor students’ work, provide immediate feedback, and provide short time span instruction at home by videos and at

school regular teaching. Similarly Crouch and Mazur in 2009, described that in an effort to assist students in reaching their learning objectives, teachers strive to offer personalized guidance through differentiated instruction (Crouch and Mazur, 2001). According to Mazur (2009), the teacher's communication with the entire class is minimal, except for the initial 5-10 minutes for assigning groups and providing instructions, as well as the final some minutes for addressing homework and conducting question and answer sessions. The role of the teachers shifts to that of a facilitator in new models of teaching. On the other hand, videos are utilized in the flipped class method not only to present information, but also to initiate group tasks and projects during in-person classroom sessions (Hamdan et.al, 2013). Among the various student-centered approaches to education, the flipped class is notable for its effective use of media in classroom instruction. The significance of direct instruction and guidance through instructional videos is stressed in studies conducted by Hamdan et al. (2013) and Perry (2012). In the flipped class approach, the learning culture becomes centered on students instead of teachers. The removal of content introductions during class time allows for a shift in learning and collaboration, as highlighted by Lambert (2013).

2.6.3 Intentional Content

The third pillar, intentional content, signifies the teachers' well-considered and discerning decision on which specific knowledge to convey directly, and the most effective approach to present this information in their video lessons. Hamdan et al. (2013) stated that a competent teacher comprehends the boundaries of their curriculum, identifies crucial concepts, understands the importance of each topic, and recognizes the connection between these subjects and the students' learning objectives. When it comes to the flipped classroom, the choice or development of content videos should not be seen as just an optional extra for assignments. Instead, these videos serve as the primary method through which students are exposed to course content through direct instruction. Consequently, it is crucial to carefully select these videos within the context of the overall curriculum for the course. Seaboyer (2013) explained that the goal of the flipped class is not simply to use technology, but rather to utilize technology as a means of supporting a curriculum focused on collaborative and active learning. Although simply viewing content is insufficient for many students to build knowledge, there are more effective approaches that can be utilized. It can establish a strong base of prior

knowledge for class activities that encourage students to delve deeper and apply and integrate their knowledge.

Strayer in 2007 described that videos should only cover key topics and critical information. It was also discussed by Hamdnan et al., in 2013 and Sainani in 2013 by stating that videos should only include content that is essential for completing projects and assignments in the course. Including unnecessary information in videos can confuse students and make them perceive the videos as a disadvantage in their learning experience. Furthermore, it is important to avoid overwhelming students with an excessive quantity of videos. Hamdan et al. (2013) and Seaboyer (2013) have found that assigning to students videos before a class can enhance learning outcomes. This pre-class activity provides students with a foundation of prior knowledge on a particular topic, which can then be utilized for in-class activities.

Although there is a “insignificance of the lecture method” because lecture method had made students passive learners and due to this factor of lecture method which resulted in making the learners as passive learners, schools and universities had started to move to active learning as it was demand of the day. Active learners is the demand of classrooms of modern time. Now students is central figure of learning and teacher’s role is as guide. Previously, teachers dominated as central figure of learning process. And lecture method was most frequent used method in classrooms. The traditional classroom setting is transformed by flipping it, requiring students to come prepared beforehand and actively participate in discussions focused on comprehensive research and critical analysis of the literature. For instance, in a humanities context, students are expected to read the original text prior to class, although they can also benefit from the teacher’s explanations and comments as these are offered in front of the entire class. Students are able to concentrate on the meaningful discussions in class rather than trying to comprehend the overall meaning of the text (Seaboyer, 2013).

2.6.4 Professional Teachers

Professional teachers play a vital role as the fourth pillar in the implementation of the flipped classroom approach. They possess the essential skills to intricately structure the unit progression, establish the desired learning outcomes for different

projects, and provide valuable guidance to students based on their expertise. Despite the student-centered, collaborative, and interactive nature of the flipped class, the expertise and teaching style of the teacher remain pivotal factors in ensuring its success. The teacher's expertise and guidance play a crucial role in the flipped classroom as they establish the course's structure and framework. They also curate or create educational videos that are pertinent to the subject matter. Moreover, they craft customized projects that stimulate students to use their knowledge for analysis, application, and synthesis. In addition, the teacher directs students towards a plethora of innovative resources and avenues for enhancing their learning experience, as highlighted by Cacciamani et al. (2011).

According to Headden (2013), the ability and ingenuity of a teacher are demonstrated through their aptitude in guiding students through content and providing constructive feedback. The real question is not whether online instruction is inherently a superior medium. According to a survey conducted by the Department of Education, the key determinants for achieving success in online-learning were the amount of time dedicated to instruction, along with the level of the curriculum and teaching methods employed.

The significance lies not just in the technology itself, but rather in how teachers utilize it. For several decades, teachers have utilized technology like power point slides to support their lectures. However, the flipped classroom method calls for teachers to incorporate video content into the in-class active learning sessions (Mazur, 2009). In the realm of higher education, technology has become an integral component of students' research process for writing assignments. Nevertheless, numerous professors in colleges and universities aspire to incorporate alternative methods of learning through media. Despite their enthusiasm, striking a balance between covering essential course material, effectively integrating technology, and facilitating collaborative work in the classroom poses a formidable challenge for teachers (Strayer, 2007). Cooperative work, collaborative work and students' position as active learners changed the educational scenario in flipped teaching. Integrating technology and change of homework has paved the way to flipped teaching. The change has resulted in the adoption of the flipped class approach, which involves introducing content outside of class time (Baker, 2000).

2.7 Benefits of Flipped Teaching

According to Musallam in 2010, the application of flipped teaching in classrooms has undergone a diverse evolution. Initially, it served as an efficient method for covering missed lecture material and providing re-teaching opportunities. However, it has since evolved to models that encourage students to authentically apply critical thinking skills. Although In 2004, by Bergmann and Sams (2012) it was also observed that high school chemistry students who adopted the flipped teaching strategy experienced notable improvements in both academic and standardized test performance in contrast to their peers who learned through conventional classroom methods. This approach has shown also positive results on attitude, motivation and interest of students. This approach also indicates students' active engagement in tasks of learning.

2.7.1 Improvement of students' achievement

In recent times, various teachers have discovered the advantages of implementing the approach known as flipped teaching in high school and college settings. In the writing style discussed by Strayer (2012), several benefits are connected to this approach. There are several advantages to be gained from this approach. It amplifies the frequency of reviewing crucial ideas and facilitates better comprehension through more opportunities for supervised practice. Furthermore, it promotes independent learning and empowers students to take ownership of their education. A study conducted by Strayer (2013), using comparison of two instructional approaches, one group included 14 students who were instructed through the flipped method, while the other group comprised 16 students who received traditional instruction. At the start and end of each semester, a survey was administered to the participants in order to assess their views on personalization, innovation, student cohesion, task orientation, cooperation, individualization, and equity within the learning environment. The survey aimed to assess participants' perspectives on their real learning environment compared to how they imagined it to be. The researcher discovered that among the majority of participants, the majority of students expressed a discrepancy between the actual classroom learning environment and their preferred learning environment. Students expressed their perception that their real learning experiences in the traditional setting fell short of what they believed it could potentially be, thus enhancing the quantitative

data with qualitative insights. According to the researchers, it was observed that the group of students following the flipped instruction style exhibited a higher level of openness towards cooperation when compared to the group of students in the traditional instruction style. The author proposed that there is a disconnection between the conventional teaching methods employed in the classroom and the attitudes and learning preferences of 21st-century students. The significance of taking student perceptions into account when evaluating their overall learning experiences was highlighted by these findings. In the realm of flipped teaching, the majority of literature focuses on quantitative aspects and their correlation with performance results. However, research of Strayer (2013) stood out from the limited number of qualitative studies by shedding light on students' perspectives. The study findings revealed that flipped instruction had the potential to yield beneficial outcomes in collaborative learning. Moreover, it was found that flipped instruction was better suited to cater to the learning requirements of today's 21st century learners. Regarding discipline and teaching strategy, in their study, Sahin et al. (2014) examined 98 students who were taking a university course and discovered a number of noteworthy findings. The authors pointed out that students not only improved their academic performance but also expressed a preference for watching the videos instead of reading the course text. The study conducted by the authors revealed that the participants in the college math group showed enhanced preparation habits and higher levels of self-efficacy when compared to a similar group that did not have the opportunity to reverse their math course. Davies et al. (2013) conducted study that explore effectiveness of flipped classrooms in general academic outcomes and academic achievement. In their study, they examined a total of 207 individuals who were enrolled in a course focusing on mixed-method learning-technology skills. According to the authors, the posttest scores indicated a significant improvement for students in the flipped classroom setting (mean of 92), as compared to those in the traditional teaching approach (mean of 84). The increase in academic achievement was attributed to the implementation of self-paced learning, which facilitated the adoption of flipped learning. According to the authors, another flipped course would be a probable choice for students in the future, as revealed by the student survey. In a study conducted by Talley and Scherer (2013), they explored the experiences of university psychology students using a mixed-methods approach. The results revealed that students not only exhibited superior academic performance but

also showcased higher levels of engagement and commitment compared to those who underwent traditional instruction methods.

2.7.2 Enhancement in students' creativity

Flipped teaching strategy has numerous advantages. The current literature demonstrates various contexts in which the flipped model can enhance students' learning. The impact of the flipped teaching model on a biochemistry course at Stanford Medical School was examined by Prober and Heath in their study conducted in 2012. The researchers discovered that by using the flipped approach, students significantly improved their understanding of mastery-level concepts, resulting in a more profound comprehension of the subject matter. The course instruction underwent modifications to incorporate succinct online presentations and designated classroom sessions for interactive discussions on diseases caused by biochemical factors. There was a noticeable increase in attendance for the term, as the figures experienced a substantial growth from 30% to 80%. In the study, the average scores of the students were 75%, whereas in the previous term, the average score of students taught through a traditional lecture-based method was a mere 45%. The authors, in their study, gave particular attention to a specific aspect of flipped opportunities. The intention was to broaden students' understanding of essential principles by presenting them in different scenarios, so as to fully prepare them for future utilization of these principles in their academic endeavors. The literature on the advantages of flip teaching also recognizes the promotion of critical thinking and problem-solving skills, which can be taken into account across various scenarios. According to Seaman (2011), it is important for students who want to pursue careers to first master the conceptual foundations of lower-level thinking before delving into more abstract ideas and applications. This idea aligns with the overall movement of Bloom's Taxonomy. Through the process of highlighting, remembering, and understanding, students in the field of medicine become equipped with the necessary skills to uncover, anticipate, and execute meaningful applications when they encounter various opportunities during their medical education. According to a study of Prober and Heath (2012), feedback lectures that stimulated students' curiosity and prompt them to ask questions and draw inferences about the material being presented have been found to be the most effective. This approach resulted in a significant increase in attendance and improvement in test scores.

According to Gannod et al., (2008), it is crucial to give attention to this aspect due to the significant change in students' behavior towards course participation and attendance resulting from the teaching model. By examining students' perceived experiences and understanding their responses, valuable insights can be gained into the more effective aspects of the flipped learning model. It was discovered that similar outcomes were shown among software engineering students at the University of Miami. In their technical report on best practices for integrating classroom content and technology, students were required to watch three to six hours of recorded lectures outside of class each week. The authors observed that by reallocating time to different learning activities, students were able to progress and engage at their own pace. The authors further argue that the classroom environment, which involved a role reversal in and out of the classroom, provided a description of the culture and environment based on students' learning readiness, self-awareness of steps, and overall engagement with classroom-based activities. The flipped learning approach distinguishes itself from traditional classrooms primarily through the increased preparation time required for teachers. The emphasis is placed on creating high-quality videos and designing well-structured classroom activities that effectively engage students. Selection and creation of quality videos attracts students. If videos are not of good quality students do not take interest.

Significant changes were observed in in-class activities, where students were required to engage in critical thinking and demonstrate their ability to navigate their own learning through increased interaction and collaboration. This shift necessitated a change in the perspectives of both students and teachers regarding their roles in the learning process, including recognizing the importance of attendance. An inverting learning focused methodology was used. Similar strategies were employed as those previously presented to allow for more class time dedicated to the application of skills in realistic settings. The classroom emphasized the value of additional time and opportunities for individualized and one-on-one instruction in the classroom, particularly for students who learn at different paces. It was discovered that students were able to apply the theoretical knowledge acquired through flipped lectures at their own pace, with expert guidance provided in the classroom. The availability of live assistance during the completion of real-life examples facilitated immediate support

and correction, leading to increased self-awareness among students regarding their needs and progress. It was also noted that personalized pacing not only enhanced students' efficiency in learning software coding but also instilled greater confidence in teachers when setting the pace for classroom activities. Teachers expressed a preference for the increased time available for expert coaching during in-class application, as opposed to relying solely on homework assignments (Boutell and Clifton, 2011).

In a study by Overmyer (2014), which was consisting of 166 students in a traditional instructed group and 135 students in a flipped instruction group. The findings revealed that the final assessments were statistically comparable for the majority of students in both groups. However, it was observed that students who were taught by teachers with prior experience in cooperative learning achieved significantly higher scores in the final assessments. This study conducted by Overmyer suggests that in order to fully benefit from flipped learning, students may require multiple exposures to the learning process, or teachers may need to develop proficiency in effectively implementing this pedagogy.

2.7.3 More demand of learning time and courses

In addition to helping teachers manage the time and content demands in college and high school courses, flipped instruction offers another valuable advantage. High schools grapple with content standards and standardized assessments that aim to evaluate proficiency in prescribed knowledge within specific time limits. College students possess a strong desire to acquire knowledge of industry norms, which empowers them to contest on an international scale, all while ensuring timely completion of their degree programs. The constraints of time and content make flipped teaching an attractive option for comprehensively covering a larger volume of material. According to a study conducted by it was discovered that by increasing student participation and satisfaction, more content could be covered in the industrial engineering program. This resulted in a greater depth of understanding and helped alleviate some of the pressures associated with the program. The researchers emphasized the significance of making sure that classroom learning activities were meaningful and engaging. Additionally, they emphasized the need to ensure that all students remained active, especially during collaborative work (Toto and Nguyen,

2018). Nielsen (2012) suggested teachers to approach flipped instruction with careful planning to ensure effective learning activities. According to Nielsen (2012), if teachers are unprepared for the necessary planning and structure, using the flipped teaching model will only enhance the potential for ineffective teaching techniques, despite its ability to enhance instructional exposure and skill application in the progression from lower to higher-order thinking tasks. When it comes to instructional models, it is essential to take into account the ultimate goal of learning and implementing best practices, as well as the readiness of teachers. In their study, Flumerfelt and Green (2013) researched into the distinct attributes that support various student types. They pinpointed and evaluated five characteristics that influenced the learning of at-risk students, and interestingly, these students seemed to derive even greater benefits from the flipped environment compared to their peers. In the study, 23 at-risk students were included in the quantitative research, specifically in a flipped government class. Another traditional government class was used as a control group, allowing for comparison. passive learning, iii) spent on independent vs. group work, iv) spent on direct instruction vs. student-centered activities, and v) devoted to deep vs. surface-level learning. This survey was designed to gather information on the amount of time participants allocated towards each of these areas. Passive learning, focused on new learning activities, available for individualized attention, and committed to differentiated instruction are the key aspects emphasized in this text.

Flumerfelt and Green (2013) further described that it was found that flipped learning settings enabled more direct interaction between teachers and individuals engaged in learning activities, leading to increased contact time. This approach also facilitated the enhancement of social skills among learners. Moreover, the information concerning student level and type of engagement further reinforces the belief that flipped learning encourages increased active participation, even during lectures. This is because students are compelled to attentively listen and take notes in order to fully engage in the classroom setting. Active learning in the classroom concentrates on enhancing learning in a personalized and in-depth approach. Activities played dominant role in improving students' engagement and learning. Individualized attention was also main factor and due to individualized attention by teachers, students' inclination towards learning was enhanced and this yielded in better academic performance. The

emphasis on individualized focus resulted in greater autonomy for students, intentional collaboration based on their specific learning needs, as well as increased differentiation through application activities and catered learning approaches. The findings of the study indicate that students who participated in extracurricular activities experienced a reasonable increase in engagement, which subsequently led to improvement in their overall academic performance. Significant improvements were observed in terms of reduced disciplinary reports and failure rates among at-risk students across all subject areas where flipped instruction was implemented, indicating growth.

The flipped teaching model offered numerous advantages, primarily centered on optimizing classroom time for collaboration, enhancing student participation in academics, and establishing more meaningful communication between students and teachers (Zanuddin, 2017). According to Green (2015), active learning is enhanced when in-class activities, like team-based, interactive, and hands-on interactions, are combined with flipped learning. The study involved six marketing students and took on a qualitative approach. According to the researcher, teachers emphasized in interviews that students felt a sense of safety in taking academic risks due to their trust in the teacher's support during the flipped classroom experience.

2.7.4 Differentiated instruction

According to Tomlinson (2014), differentiated instruction refers to a teaching approach that acknowledges and caters to the diverse learning styles of students. This method emphasizes the need for proactive planning to address individual differences within the classroom. In Dewey's perspective, the learner's role in society should be active and inclined towards critical thinking. This viewpoint sheds light on the significance of differentiated instruction. Recognizing that individuals possess unique prior knowledge and learning styles, it becomes crucial to provide opportunities for students to learn through diverse approaches. The flipped classroom methodology provides a favorable prospect for personalized teaching. By utilizing class time for interactive discussions, teachers can provide personalized feedback to each student during every session. Furthermore, learners are empowered to establish their own project prerequisites, demonstrating their proficiency in various manners. Additionally,

they can acquire knowledge at their own pace, thereby acknowledging and endorsing their unique learning preferences and choices.

Li (2018) investigated the implementation of instruction in the flipped classroom setting. The objective of their research was to ascertain whether this instructional approach would offer benefits to a broader spectrum of students. The conventional lecture classroom fails to cater to a significant number of students as it only appeals to a specific and uniform group of students. It has been discovered that students who have a preference for visual and auditory learning methods, as well as those who are experiential learners, are likely to succeed in a flipped classroom setup. The availability of technology for self-paced learning promotes inclusivity within the classroom setting, emphasizing the importance of collaboration over competition. In addition, their research reveals that implementing a flipped classroom technique grants the teacher additional time to dedicate to each student, enabling students to personalize their methods of showcasing their understanding. Ultimately, this teaching approach greatly enhances student motivation and accomplishments in reaching their desired objectives. In conclusion, Li (2018) have provided evidence on this aspect and it is suggested that teachers shift their attention away from the specific advantages of technology or educational media. Instead, they should prioritize the flexibility and concepts building aspects of the flipped classroom model when endorsing it to their students.

In their study, November and Mull (2012) also advocated for the flipped classroom approach as it prioritizes differentiated instruction. According to November and Mull (2012), it is claimed that in the flipped classroom model, the teacher should personalize and customize the assignments for students, allowing them to maximize their learning potential. They believe that students can benefit from peer modeling and peer instruction by creating videos. November and Mull (2012) confidently assert in their conclusion that the crux of motivating and inspiring students lies in acknowledging their existing knowledge and outcome of implementing video lectures is the unexpected transformation of the classroom. According to Berrett (2012), teachers have more time to establish stronger relationships with their students through increased teacher-student interaction, supporting this affordance. Bergman and Sams in 2015 explained that teachers believe that the interactions they have with their students

during flipped classroom active learning are the most valuable moments in their classrooms. This is because this approach enables them to engage with each student on a more regular basis.

2.7.5 Enhancement in critical thinking

Flipped teaching enhances independent learning and critical thinking of students. Hamdan et al., (2013) described: “the flipped classroom approach appreciates the significance of nurturing critical thinking abilities, emphasizing the need for teachers to contemplate ways in which students can enhance their self-awareness and become critical learners. Development of critical thinking has been advocated by numerous philosophers and educationists of the past. In his work in 1902, Dewey described critical thinking as an active, persistent, and careful process that involves examining a belief or supposed knowledge in relation to the supporting evidence and the potential outcomes it leads to. Dewey’s concept emphasizes the importance of Bloom’s higher order thinking skills, which are crucial for analyzing and synthesizing knowledge. Modern education necessitated the importance of making students critical thinkers. Additionally, it suggests that learners should strive to become thoughtful individuals who possess depth, well-roundedness, and a reflective mindset. The Critical Thinking Community, an online organization focused on enhancing analytical skills for societal progress, has emphasized the necessity of a knowledge-based foundation for critical thinking. Acquiring expertise in a specific subject empowers learners to generate well-reasoned and thoughtful conclusions autonomously, following thorough analysis and guidance from individuals who exemplify effective cognitive strategies”.

2.7.6 Development of higher order learning

In accordance with Bloom’s Taxonomy, acquiring knowledge through introductory learning is merely the foundation of the learning process. However, this initial step is crucial for embarking on the journey of critical thinking (Anderson et al., 2001). According to Lambert (2013), in the flipped classroom approach, students begin by gaining knowledge through media content. They also compare their understanding with their peers and seek additional information from various sources. The development of the flipped classroom approach has introduced various methods to cultivate students’

knowledge. According to Tenneson and McGlassen (2006), in today's digital era, students are immersed in media and tend to gravitate towards multimedia content for learning, as opposed to other methods. In their keynote presentation titled "The Classroom Flipped" they discovered that electronic devices offer students a range of advantages. These devices serve as sources of entertainment, platforms for social networking, tools for learning and reading, as well as means for relaxation. According to student reports, they are sourcing their own information, conducting internet searches on class-related subjects, and utilizing online textbooks for studying. They reached a conclusion that a media rich environment is now equivalent to a print rich environment. Seaboyer, (2013) suggested that online media is the most effective means of exposing students to a diverse range of content and sources. The approach of flipping the class suggests that students should first watch the content videos before attending the class. This helps to establish a shared understanding of the content information, serving as a basis for engaging in critical discussions.

In order to enhance critical thinking skills, Peer Instruction and Project-based learning offer students the chance to learn by engaging in discussions and retelling what they have learned from the content information. When students collaborate in order to explore how information can be utilized to resolve a problem, they engage in content review, application of understanding, and meaning negotiation with their peers (Mazur, 2009). The flipped classroom allows for additional time to engage in activities that involve students recounting and utilizing information to address real-life issues. Peers and the teacher's feedback both serve as examples for modeling critical thinking. Additional time in flipped teaching makes students more active and engages them in learning activities (Lambert, 2013). Critical thinking is enhanced by several methods. Another way to enhance critical thinking is by verbally retelling or explaining concepts to someone else. Interactive pedagogy transforms students from passive note-takers into active participants, as they engage in exchanging and defending their viewpoints while teachers explain their ideas. The teacher is the one who gains the most knowledge in any classroom setting. This is due to their role in explaining, clarifying, and finding evidence to support their opinions. In the approach called the flipped class, the authority structures are reversed as well. Instead of the teacher being the one who teaches, the student takes on the role of a peer tutor. Meanwhile, the teacher steps back and becomes

a listener, learning from their students about what content and activities they should initiate afterwards (Mazur, 2013).

According to Lambert (2013), when students take on the role of teacher in a study, they gain a deeper understanding of the subject matter and are able to make direct connections with their own experiences, projects, and goals. This, in turn, enhances their problem-solving and critical thinking skills. According to Mazur (2013), it is essential for students to retell and apply their knowledge in order to develop critical thinking skills and be in charge of their own learning journey.

2.7.7 Development of Meta cognition

According to Cacciamani et al. (2011), meta-cognition marks the last phase of critical thinking. During this stage, students are capable of persisting in learning with minimal to zero assistance. Moreover, they possess the capacity to carefully examine and evaluate their own thoughts as well as the conclusions they have drawn. In view point of Bergmna and Sams (2012), in academic literature, the primary aim of flipping the classroom is to actively involve students, allowing them to maximize the value of their in-person interactions. A widely endorsed approach is to prioritize the cultivation of critical thinking skills during face-to-face learning sessions. According to Burch (2013) from the center for teaching and learning at College, the implementation of a flipped classroom provides students with increased opportunities for inquiry and involvement through engaging in active learning. According to Lambert, (2012) and Berret (2013), this approach fosters the development of problem-solving techniques and critical thinking skills. According to Mazur (2022), the availability of online forums offers students the opportunity to explore a wide range of viewpoints and information sources, providing them with ample avenues for discussion and interaction. According to Cacciamani et al. (2011), when individuals are exposed to different and conflicting viewpoints, it can contribute to the cultivation of critical thinking abilities. This occurs as they attempt to reach a collective agreement within the group. In the realm of education, the flipped class teaching grants teachers the freedom to construct learning environments that prioritize critical thinking and reflection.

According to Burch (2013), when class time is used for discussing content and clearing up any misconceptions, greater importance is given to students' thought

processes. According to Cacciamani et al. (2011), the flipped classroom fosters a less controlled environment that promotes a more informed and self-directed approach to learning. In this setting, students have the opportunity to take charge of the discussions and debates surrounding the course material. In addition, teachers possess the advantage of having extra time at their disposal to effectively lead students towards personal introspection. They can also assist students in critically examining various perspectives, texts, and sources of information (Bergmann and Sams, 2012).

According to Mazur (2009), the culmination of achieving a balance between personal reflection and active engagement results in critical thinking, ultimately leading to independent learning. In their study, Cacciamani et al. (2011) delve into the realm of students' engagement in activities and independent learning. They conducted study in 2011 to examine how the flipped classroom approach affected the development of students' meta-cognition. It is suggested by them that students should exercise a higher level of agency, wherein their critical thinking skills truly blossom when they depend on their peers and self-judgment of their own ideas, rather than solely relying on their teacher. In their concluding statement, the researchers, Cacciamani et al. (2011), discussed that proponents of the flipped classroom approach endorsed the idea of gradually developing students' critical thinking abilities by flipping classroom is possible and this fosters independent learning over the course of their education. According to November and Mull (2012), teachers should gradually assist students in working collaboratively without solely relying on the teacher. They argue that implementing a flipped classroom approach enables teachers to step back and allow students to become responsible for their own learning. According to November and Mull (2012), offering students the opportunity to learn independently allows them to effectively tackle any misunderstandings they might have, while also applying their understanding of the material they have learned.

Lambert (2013) highlights that fostering critical thinking in students is vital yet challenging. According to Mazur (2013), the key lies in enabling students to confront their own misconceptions, as this will ultimately lead to their growth as thinkers. Lambert (2013) advocates for the transformation of students into proficient problem solvers after years of utilizing Peer Instruction in a flipped classroom setting.

2.8 Main Challenges in Implementation of Flipped Teaching

Baytiyah and Naja (2017) explained and provided important guidelines for introducing flipped classroom teaching method. It is important to understand that the effectiveness of this teaching method does not rely on video tutorials or materials. Instead, its true value lies in the in-class periods that prioritize student-centered learning activities, such as problem-based learning and inquiry-oriented strategies.

According to Karimi, & Hamzavi (2018), the utilization of the flipped classroom approach grants teachers the ability to design diverse learning encounters that cater to the individual needs of every student. It also enables them to guide and support their students in reaching the advanced levels of Bloom's taxonomy, which specifically highlight critical thinking, collaborative work, and the capacity to solve complex problems. The flipped classroom approach does not eliminate teacher involvement, it simply adjusts the time the teacher spends interacting with students. Flipped classrooms provide more opportunities to participate in the learning process, provide support, and use multiple skills.

According to Bishop and Vergler (2013) a study on the flipped class has identified three primary challenges that teachers face: access issues (such as limited availability of technology and time constraints), skill-related obstacles (including the need for professional development and media literacy), and approach-related barriers (such as a preference for traditional teaching methods, inconsistency in course design, and reluctance to incorporate media into teaching). According to Ayberdi et al., (2023), the concern about the effective use and amount of preparation time required for flipped classroom compared to traditional methods of instruction has been widely discussed in the literature. Given this, it is possible that the flipped classroom approach may not be appropriate for every academic subject. According to Strayer in 2012, an instance of this can be seen in a research where a comparative study was conducted between a flipped classroom and a traditional classroom format for an introductory statistics course. According to a study conducted by O'Flaherty and Phillips in 2015, it was discovered that the students who took part in the flipped classroom approach expressed a lower level of satisfaction with the teaching compared to those in a traditional classroom setting. The students faced difficulties in adapting to the learning style of the

flipped classroom as well. They had a preference for working alone rather than engaging in group activities. Take college students in China as an example; in their quest for knowledge, they continue to heavily depend on classroom teaching and their teachers. According to Lixin and Xiaoxiang (2004), their self-learning abilities are limited due to a lack of autonomy. Autonomy is very necessary for students' self-engagement in learning activities.

The passiveness in learning that students exhibited may be attributed to the long-standing authoritative role of teachers, who continuously monitor and supervise students throughout their academic journey. According to Fisher et al., (2018) fostering self-autonomy becomes especially challenging for learners as they grow older, such as pre-university students. The flipped classroom presents another challenge for teachers as they may struggle to convert their traditional lectures into online material. Preparing a video lecture may require a longer time compared to a traditional lecture owing to the technological intricacies involved, such as the need for re-recording the entire video lecture.

According to Hwang et al., (2015), for some teachers, this approach might be the simplest. In order to flip a writing classroom, the teachers must convert their instructional material into video format. According to Li, (2018) nevertheless, for numerous teachers, it could present a difficulty due to its significant requirements in computer science and information technology expertise. In addition to the hurdle of mastering the utilization of free software programs, teachers must also devote considerable time to prepare instructional materials, formulate innovative methods for delivering information, and meticulously record and edit the lecture video. The process is commonly referred to as a difficult and hectic job that consumes a significant amount of time and depletes one's energy (Li., 2018). It was finding of many researchers that if teachers lack technical skills, the quality of video lectures may fail to capture students' interest, which would be the worst-case scenario. In addition, the use of computers or smartphones in learning often leads many L2 learners to become easily distracted from thoughtful study (Anshari et al., 2017; McCoy, 2016, Soltanpour & Valizadeh, 2018).

With the availability of computers and smartphones, students now have the opportunity to engage in more enjoyable communication with others and quickly

entertain themselves. Consequently, the inclination to download video lectures for self-study may diminish. In certain instances, the implementation of the flipped classroom approach, which relies on the assumption that students take ownership of their learning could prove to be challenging. Not all students view the lecture video before coming to class, although it is generally assumed. In every classroom, there will inevitably be students who neglect to watch the lecture videos either because they lack supervision or struggle with organizational skills. Moreover, the flipped classroom approach heavily depends on the utilization of computers and the internet outside of the traditional classroom setting, which could pose a challenge for certain students lacking access to these resources at home. In the event that students lack access to the necessary computers and Internet for the flipped classroom approach, they may be compelled to rely on public computer facilities such as libraries or internet cafes. The usage of computers and the Internet in public places presents certain limitations, which is a source of concern (Rotellar and Cains, 2016).

Wagner et al., (2013) were of the view that teachers must take into account the duration of video presentations when implementing the flipped classroom pedagogical method. They expressed that the majority of students in their study favored videos with a duration of 20 minutes or over 20 minutes, while a smaller percentage of students preferred videos that were less than 10 minutes long. Thus with quality of video, length of video is also valuable in fruitful implementation of flipped method.

2.9 Major Drawbacks of Flipped Teaching

In certain courses, it may be challenging to discover real-life applications for the teachings. This is mainly due to the fact that such applications might be too abstract for the current course level, or because the courses prioritize laying a strong foundation for future or more advanced content, rather than immediate practicality. In numerous advanced English courses, especially those not catering to particular career domains, this tends to be the scenario. In 2011, Pink explored how a school gave great importance to accessibility to practice and instruction of innovative and inverted methods. They achieved this by establishing teacher and student YouTube accounts, which effectively enhanced student engagement with educational material both inside and outside the classroom. Ford et al. (2012) in their study observed two General Psychology classes

over the span of two semesters, each consisting of approximately 30 participants. Interestingly, the study revealed that students who learned through video recorded lessons did not always achieve the desired level of effectiveness, despite the fact that video-casted lessons were preferred by the students themselves. Students were urged to utilize the instructional videos for guidance, practice, and assistance in cases where they faced difficulties comprehending the material or attained unsatisfactory scores in assessments. Nonetheless, despite the provision of these additional resources, students failed to show any improvement in their assessment results compared to peers taught in a traditional manner. The significance of this discovery lies in the fact that the flipped model should not only focus on providing access to materials and information outside of class. Although students expressed a preference for the resources, the lack of structure in their interaction with these resources did not result in improved mastery, collaboration, or critical thinking. These were observed in the study of Hutchings and Quiney (2015) that regardless of an increase in academic achievements, certain students struggled with the significant transition to flipped instruction. The combination of inquiry-based learning with technological platform changes proved to be a challenge for everyone, and it generated dissatisfaction among certain individuals due to the excessive amount of change. Although the flipped teaching model demonstrated potential in the high school setting, it is crucial to thoroughly evaluate and tackle its advantages and disadvantages with meticulous planning. This involves taking into account the deliberate utilization of resources and meticulous preparations of partnerships that are expected to stimulate students' dedication and involvement in critical thinking. According to a study conducted by Strayer (2007), half of the students in introductory statistics and calculus courses felt more in control of their learning in the flipped classroom, while the other half did not. This suggests that students' self-perceptions and confidence in learning with this model require time to develop. Learning in a flipped environment and the associated teaching responsibilities require a complete shift in thinking and instructional methods, deviating from the conventional classroom setting. The idea that there is still more to discover about the characteristics of the flipped classroom culture was supported by these findings.

In the study conducted by Fulton (2012 b), the author examined the impact of using flipped instruction in a high school mathematics class. The flipped instruction

approach involved students watching instructional videos and completing practice exercises before attending class. This allowed them to be exposed to the lesson presentations and sample practice items beforehand. This before preparation prepares students in more convincing way in class. They have watched the concepts which will be the topic of the lesson of coming class. In order to mimic the process and apply formulas step-by-step with the teacher, students were required to watch the lessons and engage in practicing fundamental concepts showcased in the video presentation. During the class, the students were motivated to tackle progressively more challenging problems by working together with their teacher and peers. Collaboration enabled instant error detection and enhanced students' inclination to experiment. The academic scores showed a significant enhancement wherein the state proficiency exams revealed also a considerable improvement in performance of students. Furthermore, the author's research revealed that a majority of parents favored this particular flipped based classrooms model as a means of assisting students in achieving success in a challenging course while reducing frustration (Fulton, 2012 b).

2.10 Flipped Teaching and Bloom's Taxonomy

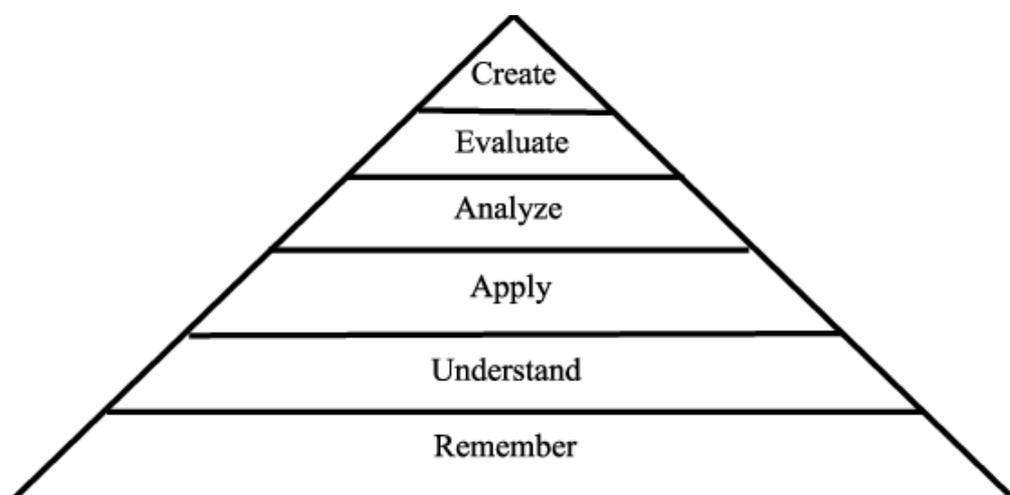
Teachers previously utilized Blooms Taxonomy in their teaching methods, resulting in a shift from lower order thinking skills to higher order thinking skills within ordinary classroom settings. The implementation of flipped classroom instruction provided teachers with the opportunity to reduce lecture time and increase student engagement, ultimately enhancing their cognitive abilities. By inverting Bloom's taxonomy, flipped classroom instruction allowed students to delve into profound and innovative thinking (Wilson, 2013). The primary focus of the flipped classroom approach is to facilitate the application and optimization of interactions between students and both teachers and peers. Consequently, the teacher's role becomes that of a facilitator, guiding students through the higher-order thinking skills of application, analysis, evaluation, and creation within the classroom (Wilson, 2016).

Bloom's taxonomy serves as an educational tool that enables teachers to elevate the level of learning and enhance the cognitive abilities of students. In line with the demands of the 21st-century student, the levels of taxonomy were renamed by Anderson and Krathwohl (2001). The implementation of Bloom's taxonomy has been

proven to boost students' proficiency in grasping concepts and critical thinking skills was also supported by the research study of Bissell and Lemons in 2006.

It is recommended that the higher-order thinking skills should be practiced within the classroom setting to ensure immediate guidance and support from teachers. The necessity for teachers' physical presence arises when students encounter difficulties and require personalized assistance (Bergman and Sams, 2012).

Bergmann and Sams (2012) also argued that inverting the classrooms for achievement of Blooms taxonomy allowed students to enhance their thinking abilities. This instructional approach transformed the learning dynamics within the classroom, encouraging higher-order cognitive skills such as applying, analyzing, evaluating, and creating. Instead of solely focusing on lower-level learning tasks like remembering and understanding, students were now able to engage in more complex cognitive processes. The changes in the teacher's role have led to a significant improvement in thinking skills. Additionally, to optimize higher order thinking skills during class time, the basic level of Blooms taxonomy (which includes remembering and understanding of content) was covered through flipped classroom instruction at home. It was discovered that numerous students tend to forget the content delivered by their teachers during lectures. According to Rotellar and Cains (2016), "When teachers focus on higher order levels of Bloom Taxonomy at classrooms, this active engagement results in higher order learning of students."



(Figure 2.1: Revised Bloom's Taxonomy, by Anderson et al., 2001)

The revised taxonomy provides six levels of learning. In teaching these six levels serve as model for learning and also in assessment of class, these six levels serve as guideline for paper and test development based on Revised Bloom Taxonomy. The explanation is arranged from the lowest level to the highest level:

- Remember: At this stage, the students engage in the process of recognizing and recalling the information they have been given. Additionally, they strive to grasp the fundamental concepts and principles underlying the content they have acquired.
- Understand: The students make an effort to exhibit their comprehension, investigate the data, and condense their knowledge into a summary.
- Apply: The students demonstrate their learnings by putting them into practice or using their knowledge in real-life scenarios.
- Analyze: The students employ critical thinking skills to address the problem, engage in discussions with their peers, analyze different responses, and generate a summary. When students engage in critical thinking or group debates during activities, they acquire fresh knowledge and ideas. At this stage of learning, the students are capable of generating creative ideas as well.
- Evaluate: In this stage, students are engaging in assessment or referencing established peer-review knowledge to make judgments in relational terms. They are evaluating the entire learning concepts, and determining the extent to which they have successfully acquired knowledge.
- Create: The students possess the capability to create, build, and generate novel creations based on their acquired knowledge (Williams and Beth, 2013).

In the flipped classroom approach, the cognitive domains of remembering and understanding are often focused on outside of the scheduled class time (Krathwohl & Anderson, 2010). Within the classroom sessions, learners are actively involved in more advanced cognitive tasks, including applying, analyzing, evaluating, and creating. The flipped classroom model allows students to advance from the foundational level of remembering to the highest level of creating. According to Lankford (2013) it was

highlighted that the primary objective of the flipped classroom is to support learners in achieving higher levels within the taxonomy domain.

Numerous teachers have found great value in incorporating these videos of different lengths into their instruction as they implement the flipped classroom approach. Students watched the course videos from the comfort of their own homes, while engaging in other activities like homework during their time at school (Staker and Horn, 2012).

2.11 Perceptions of Students about Flipped Teaching

Students have varying opinions about the flipped classroom approach. Some students are highly interested in active collaboration and enthusiastically embrace the use of media in their coursework (Fulton, 2012 a). However, there are also students who feel uneasy about taking on too much responsibility and are concerned about the teacher's lack of direct content instruction (Green, 2012). Different students have different perceptions and experiences with the flipped classroom model (Strayer, 2007, Quint, 2015).

In the quest to enhance understanding of students' perspectives on learning and learning strategies in the flipped-based classroom, researchers have adopted diverse methodologies. According to Chen and Hoshower (2003), student ratings are widely used to evaluate student perceptions of teaching and learning styles. Nevertheless, the authors expressed caution, suggesting that this may not be the most suitable approach. According to a survey conducted among college students, it was found that rating systems lack the ability to facilitate collaborative feedback. Furthermore, the students expressed their doubts about how effectively their concerns were being expressed, as they did not perceive any noticeable improvements in the classroom as a result. When evaluating student perceptions regarding the flipped environment, it is crucial to consider the following: students must feel that they have been given ample opportunities to express their thoughts effectively and be heard. Additionally, it is important to provide them with a chance to understand how their feedback can contribute to enhancing the learning environment. According to Floyd et al. (2009), a variety and range of tools were utilized to create a comprehensive survey in order to

assess the perceived value of the course, student engagement, strategies employed for surface learning, and strategies employed for deeper learning. The researchers observed that a greater level of profound learning took place when students were encouraged to actively participate on a regular basis and when they perceived a significant importance in the subject matter of the course. It is crucial to acknowledge that in order to comprehend instructional practices, they must be both engaging and capable of promoting a higher perceived value. It is possible that this is connected to the way students perceive the presentation of student-centered, authentic tasks as meaningful. The impact of teaching style on learning outcomes is just as significant as the influence of learning styles. Acquiring an understanding of how students perceive instructional strategies and the strategies they utilize in learning is highly valuable. According to Stitt-Gohdes (2011), the existing literature lacked information on how students perceive these components in the flipped learning environment. However, these concepts can be examined more broadly. Research suggests that students learn best when instruction accommodates diverse learning styles, even if teachers typically rely on their own learning experiences or teaching methods. According to Farkas (2003), when altering instruction to accommodate the learning style of seventh-grade students, if teacher uses teaching wisely to cope with diverse learning styles of students, performance increases. Moreover, the way students perceive their learning style may vary depending on the subject being taught. According to Chang (2020), students expressed a notable affinity for the constructivist teaching and learning approach when it came to the subject matter. Additionally, the students conveyed a sense of enhanced comprehension of the subject matter derived from their engagements with the information. Furthermore, it was reported by Sungur and Takkaya (2006) that students who participated in problem-based learning in different high school biology classes displayed a surge in intrinsic motivation to achieve learning objectives, along with a heightened willingness to utilize meta-cognitive strategies for learning. When teachers delve into the realm of flipped instruction, they must carefully consider the importance of student perceptions and the most effective teaching styles that facilitate interaction with complex tasks. The flipped classroom is often deemed more valuable by students for its learning strategies that promote problem-solving, collaborative interaction, and enhanced meta-cognitive strategies. The flipped method has become widely popular across the globe. This approach has been adopted even by developing nations.

Furthermore, Chang and Liu (2011) investigated into the realm of student perspectives regarding learning strategies in a college physics course enhanced by technology. Their findings indicated that students believed their success was not solely dependent on the instructional model utilized, but also on their prior knowledge, study habits, and the environment within the classroom. The study revealed a stronger inclination towards technology-enhanced learning among women compared to men, implying that there might be gender variations in perceptions as well. According to viewpoint based on researches of Danker in 2015 and Gough, et al., in 2016, it is crucial to take into account all aspects of the intent of the flipped classroom, such as the intentional use of instructional and learning strategies that connect prior knowledge to new information, promote effective study habits, and foster a positive classroom atmosphere. In conclusion, it is essential to study student perceptions of classroom learning. However, Kennedy et al., (2002) argues that there are critics who contend that student perceptions might not necessarily correspond with the actual activities taking place in the classroom. According Kennedy et al. (2002), marketing students tend to have an inflated perception of their abilities when they do not frequently engage in making informed judgments about their skills. They discovered that marketing students in higher education were capable of accurately depicting their learning experiences in relation to the strategies they believed were being utilized. The authors of this article are Kennedy and colleagues (Kennedy et al. 2014). Some researchers concluded that it does not have an impact, whereas in 2009, Kuhn and Rundle-Thiele found evidence suggesting that it does have an impact. According to study of Kuhn and Rundle-Thiele (2009), it was mentioned that the researchers also took into account the self-perceptions of students in relation to their actual outcomes. Here, we present a few possible insights that could be of value. The authors emphasized the importance of teaching students to be self-aware of their abilities in order to ensure accurate perceptions of performance over time. However, it is important to make the effort to determine student perceptions as it has the potential to uncover the reasons behind the success of certain elements of the flipped learning environment in some situations, while also highlighting the areas where it has not been as effective. Furthermore, it is important to note that the current study focused solely on describing the learner's experiences and value of the flipped learning environment, without taking into account perceptions related to performance. The purpose was to describe the learners' experiences, rather than to assess the quality

of outcomes. Chen and Hoshower, (2003) were of the view that by comprehending students' perspectives, teachers can make better-informed choices on how to adapt instructional methods to cater to the unique requirements of both individuals and groups of learners. Teachers must take into consideration and must keep students in mind when adopting and selecting method of teaching.

To illustrate the advantages of the flipped class, two studies are very important. Marcey and Brint (2012) conducted the study and compared a flipped class to a traditional method of instruction. The second study, carried out by Fulton (2012 b), involved interviews with students. These studies offer valuable insights into the benefits of the flipped class approach. Martin (2015) made an attempt to conduct a study that aimed to compare the final exam performance in two sections of an introductory Biology course at the same university. One section followed a flipped classroom approach while the other section relied on traditional lecture-style teaching. Nevertheless, the progress of their study encountered a setback when around 77% of the students in the traditional lecture stumbled upon the content videos and forum of the flipped course, leading them to start utilizing these resources. According to the report, upon discovering that the other class had adopted the flipped classroom approach, these students took the initiative to develop their own flipped class independent of their teacher's guidance. Despite not being asked and not being under any pressure, the students voluntarily decided to incorporate an online component into their learning by self-flipping their course. In their free time, students from both sections joined forces to study together and engage in extensive group discussions about the videos. The flipped class students shared their insights on the in-class discussions they participated in that day, while the other class students posed questions. According to a survey conducted with students from the traditional course, it was found that they incorporated the practice of "lectures" into their daily study routines after realizing its benefits. They perceived this method as both engaging and effective in enhancing their studying experience. Intrigued by the outcomes and curious about the reasons, Marcey and Brint (2012) were astonished at the results, pondering why the students from the other course displayed such eagerness in incorporating the "lectures" into their study routine. The achievements on exams for both sections of the course were considerably higher compared to previous semesters. Furthermore, it is important to highlight that

the students in the traditional lecture and the flipped course showed a significant convergence in their learning outcomes, indicating a remarkable reduction in differences. This occurred once the students in the traditional class started accessing the video lectures. According to their findings, there existed a disparity in performance before the midterm exams. However, following the implementation of video lectures watched by students from the other class, the final exam results for both classes became comparable and surpassed the scores from previous semesters. The discrepancy in test performance was primarily attributed to notes in-class and active learning exercises, as concluded. In conclusion, the researchers were astonished by this outcome, as it contradicted the existing wealth of literature which highlights the substantial improvement in student learning outcomes resulting from active participation in the classroom, rather than solely relying on online media. To summarize, it was discovered that students from both courses expressed a preference for a flipped classroom rather than a traditional lecture format, even without any influence from their teacher to alter their studying routines. Furthermore, despite one section of the course lacking active learning in class, the students in both courses attained comparable results on exams. The absence of formal instruction could have been compensated by the peer-supported learning in the regular post-class study groups.

In another study centered on the viewpoints of students regarding the flipped classroom approach, Fulton (2012 b) conducted interviews with students enrolled in flipped classes at Byron High School in Illinois. According to students, they valued the additional support provided by teachers in the classroom, preferred to study lessons at their own speed, had a preference for actively participating in class discussions rather than passively listening to lectures, and expressed a sense of gaining a higher level of knowledge compared to their experiences in other classes. Students showed a preference for a flipped class when the instructional videos were created by their own teacher. This was because the students enjoyed the opportunity to watch their teacher's videos from the comfort of their own homes. According to Green (2012), Hamdan et al. (2013), many students have expressed a strong preference for flipped classes over traditional instructional methods, according to their responses. According to Fulton (2012 b) it appears that allowing students the chance to invert classroom should be a collaborative agreement reached between teacher and their students. However, despite

the teacher's initiative, some students independently integrate media for help in their studies into their traditional classrooms and create learning social networks and communities of practice (Saunders, 2014).

2.13 Traditional Method

The traditional method, commonly referred to as the grammar translation method, has been entrenched in numerous countries, including Pakistan, for centuries and continues to persist in our present times. This approach places emphasis on the development of reading skills, utilizing the study of grammar to enhance comprehension, along with extensive practice in written and spoken translation. The main focus of this text is placed on the subjects of reading, writing, translation, and grammatical rules. This teaching method was used to instruct ancient classical languages such as Greek and Latin in the Western world, as well as Arabic and Persian in the Eastern world. This method has gained popularity among both language teachers and learners. However, the primary concern with this approach is its disregard for the learners' listening and speaking abilities. The students who employ this method of study possess excellence reading and writing skills. However, they struggle when it comes to speaking or utilizing their language knowledge while interacting with native speakers. Students' speaking skills are relatively inactive, despite the fact that one of the fundamental objectives of language acquisition is the ability to communicate with other speakers of the target language (Waseem, 2012).

It is undeniable that the traditional grammar-translation method has transferred the rich heritage of literature and science to us, but due to its flaws, it is no longer favored. However, if we wish to preserve our national language and acquire knowledge in various fields, we still require this method. Translation from other languages can also enhance our language, and it is crucial to teach this technique to our students from an early age. It may be beneficial to briefly examine other methodologies that have replaced the grammar-translation method in recent years (Tahir, 2014).

In addition, the conventional approach to English instruction involves providing direct equivalents in the mother tongue for English words, phrases, and sentences, and vice versa. This method is more straightforward when translating from the mother

tongue to English, as we are able to draw upon a wide range of expressions to convey an English expression. However, when attempting to find English equivalents for Urdu expressions, the process becomes more challenging. When translating from English to the mother tongue, we face a more challenging task as we are working with an unfamiliar medium. The mother tongue provides us with a range of expressions to choose from, whereas English may not have direct equivalents. In this case, we must transition from a familiar medium (the mother tongue) to an unfamiliar one (English), where our level of control is not as strong. Consequently, we are faced with a more difficult situation in the latter scenario. (Tanveer, 2014).

2.14 Reasons behind Attractiveness of Traditional Method

Tahir (2014), Waseem (2012) and Harsh (2014) illustrated that traditional method is popular for the following factors:

➤ **This task does not demand physical exertion**

Despite the plethora of modern theories put forth by language teachers and researchers, the traditional method of teaching English remains firmly deep-rooted in this country. In traditional teaching environment the student doesn't need to be original or think deeply or pre-plan. Traditional method is easy environment in which teachers and students remain easy.

➤ **Introducing new vocabulary made easy**

To embark on the journey of language acquisition, one must initially grasp the significance behind unfamiliar words, phrases, and sentences. The child immediately grasps the meaning of the English word or phrase once they are provided with the equivalent term in their mother tongue. The child quickly understands the full meaning of the foreign expression.

➤ **The text is written in a clear and unambiguous manner**

When the student is provided with a precise translation of an English expression in their native language, there is no ambiguity left. If the teachers were to use other methods to explain it, such as incorporating it into a sentence, providing its definition, or associating it with an object or a picture, there was a high chance that the student would misunderstand it. It simplifies the process for

students without causing any confusion.

➤ **The meaning of an abstract term is made clear**

It is difficult for a teacher to explain abstract concept. No matter how many diagrams, pictures, sketches, or models one uses, it would never adequately convey to a child the true essence of abstract concepts like autumn, falsehood, honesty, beautiful, good, nice, or ugly. In the mother tongue, an exact parallel translation effectively clarifies each word, without unnecessary expenditure of time and effort.

➤ **The text explains the concept of concrete objects that are not physically present**

The traditional method is a suitable way to clarify the meanings of concrete objects that go beyond a child's direct experience. Because concrete ideas and concepts are easily illustrated through grammar translation method or simple lecture. In accordance with a fundamental principle, it is essential to avoid using more complex language when defining a term than the term itself.

2.15 Major Principles Involved in Traditional Teaching

Waseem (2012) narrated that following main points must be kept in mind when using traditional grammar translation method. Nazir (2014) also described similar following main points must be followed when using traditional grammar translation method.

➤ **Do not directly translate**

The students should comprehend that they are replacing the words and phrases of one language with those of another. In terms of writing, the translation unit should be the sentence rather than the individual word. Thorough grasp of the passage should precede translation

➤ **Students can acquire knowledge through the process of matching and paralleling**

It is important for students to start learning the correct English idiom alongside the corresponding Urdu expression right from the start. Constant practice in matching and paralleling them can fix them firmly in the mind. Break long sentences into smaller units. Small units are base of this method.

➤ **Oral translation should be prioritized over written work**

It would be highly advantageous for the students if they were given effective oral drills before starting their written work, as this would help them avoid making a multitude of errors. Oral work helps them become acquainted with the structure of particular sentence types and gives them a grasp of the correct format.

➤ **It is important to pay special attention to tenses and punctuation**

The primary obstacle that foreign students face in this method is the correct usage of tense. The teacher must ensure that they offer the students efficient practice in comparing tenses in both languages.

➤ **Pay attention to the subject and the main verb**

To avoid confusion in translation, it is important for students to carefully construct the subject and principal verb. It assists him in formulating an accurate English sentence. It is advised to give full attention and focus on main subject and main verb.

➤ **The passages have been graded and are ready for translation**

The text should begin with simple constructions and as the students learn and progress, more complex forms should be gradually introduced. There are many mistakes that would be avoided. Setting difficult passages that lead to complexity ends do not yield any benefits. This step leads from simpler translations to difficult translations and simple to complex strategy is followed.

➤ **Be Careful When Retranslating**

“Retranslation” refers to the act of translating a text or language back into its original form or another language. Emphasizing the beauty of expression, grammatical construction, and force of style is an exercise that proves to be useful. When a student translates an English piece into Urdu and then, after a few days, translates it back into English, they can readily identify their own shortcomings and make the necessary efforts to enhance their skills. Very careful consideration is required when retranslation process is to be done.

➤ **Focus on Structure and Idiom**

There are essential idiomatic expressions or fundamental structures that can be used as a foundation. Careful categorizing of basic structure and idiomatic phrases in English is essential. These phrases ought to function as the central ideas, and the entire exercise must be structured around them.

➤ **Present a product that appears to be unique and original**

The true measure of a well-executed translation is its ability to be free from any hint of being borrowed or recycled. The text should be crafted in a manner that exudes the spirit of originality and creativity, resembling a unique work of art. The text ought to exhibit a tasteful literary essence, adorned with an artistic skill.

2.16 Limitations of Traditional Method

The ancient method, known as the traditional method, is now considered outdated and outmoded in the realm of language teaching. Recent studies indicate that this method is best suited for instructing ancient and classical languages, with the primary aim of accessing their literary works. Conversely, when teaching a modern language such as English, the most efficient method for achieving proficiency is through oral communication. The utilization of translation impedes the direct correlation between experience and expression, resulting in a foreign word being disconnected from its intended meaning. This does not meet the needs of foreign language in natural way. Consequently, it is advisable to abandon this approach or mix this approach with modern method as it is not much useful (Tahir, 2014).

Waseem (2012) explained following limitations of traditional method: of teaching English.

➤ **There has been a complete disregard for speech training**

In order to successfully learn a new language, it is vital to undergo effective speech training as a necessary step. Active use is necessary to learn any living language. As the child becomes proficient in using the language for communication, he begins to perceive its significance, practicality, and hence, fascination. Speaking is very significant for language learner. Speaking is totally neglected in this method. Due to use of method, speaking was ignored.

➤ **The method being used is unnatural**

The process of learning English becomes unnatural when using word-for-word translation. The typical error made here is assuming that words can be assembled using rules akin to arithmetic operations with digits.

➤ **Translation can be perceived as an obstacle that hinders the process of thinking in English**

It is a universally shared belief that, at the end of the day, the students need to reach a point where they can express themselves in English without relying on any translations. They should possess the ability to generate original structures in the language as well. To effectively communicate in English, both verbally and through writing, one must possess the ability to think directly in English without relying on their native language for expression. Translation, as a method of composition in general, has a major drawback in that it hinders students' ability to think in English or express themselves in English. The rationale behind this is that a child, by habitually constructing their thoughts in their native language and subsequently translating them into English, will always rely on expressing themselves in the native language before being able to do so in English. Students' thoughts are always busy in native language and re-translation.

➤ **The nature of the child is unfamiliar with grammar**

The translation method utilizes graded linguistic material, thereby giving it the name of grammatical method. The students' enthusiasm for the new language is skillfully ignited with grammatical complications, as abstract grammar terms are not presented in a gloomy or serious manner, but instead through joyful play and happiness.

➤ **Learning a language is more of an art than a science**

Language learning is a skill that requires practice in order to develop. Learning the rules of Syntax or simply memorizing the meanings of words and phrases would be insufficient in facilitating the acquisition of a foreign language. Merely memorizing the meanings of words and phrases or solely focusing on the rules of Syntax would not be beneficial for learning a foreign language.

➤ **The spontaneity is killed by the translation method**

The fluency and spontaneity levels are greatly affected when words and sentences are learned through translation. The meanings of words and phrases, which are victims of translation, do not contribute to the enhancement of learning a foreign language. The reflection of national attributes can be observed through the medium

of language. The thoughts, feelings, surroundings, and customs of each nation are vastly distinct from one another. The reflection of national characteristics can be seen through the language that is spoken. The thoughts, feelings, surroundings, and customs of one nation diverge greatly from those of another nation. The Urdu words we have come across do not have any equivalent words in English, which highlights the profound cultural, social, religious, and political disparities that exist.

➤ **The process of translating impedes the speed of reading**

In the Translation method, a word, rather than a sentence, serves as the primary unit of Language. In the process of reading, the student often tends to break up the sentence into individual words rather than fully grasping the overall meaning. A sentence is considered to be the fundamental building block of language, as it effectively conveys a complete thought, thereby enhancing the speedy acquisition of language skills. The division of the text into separate parts hinders reading progress and often hampers the understanding of the content. Division does not make often clarity of overall theme.

➤ **The dangers of literal translation should not be underestimated**

This approach emphasizes not just the translation of English words and sentences into vernacular words and sentences, but also the conversion of vernacular into English. If the teacher does not take measures to combat this harmful tendency, the student may develop the unhealthy habit of engaging in literal translation, which poses a danger to their learning process.

➤ **The atmosphere proves unhelpful**

Using too much practice of translation is not beneficial for creating an environment that is conducive to English language teaching. The excessive use of the mother tongue prevents the student from forming a direct connection with the language in order to effectively absorb it. It is imperative to use association and memory in order to learn a language successfully. Without directly linking the English word to our own experiences and establishing a strong memory bond through consistent practice, the use of English expressions will not come naturally. If one solely relies on studying English through grammar-translation methods for many years, they may end up as an unsure speaker, producing nonsensical and unidiomatic phrases.

2.17 English as an Important Subject in Pakistan

English, undoubtedly, holds a prominent position as one of the most widely spoken languages across the globe. Simultaneously, it is both the simplest and the most challenging language to understand. The problem of language barriers is a significant issue for non-English individuals worldwide, but it is particularly challenging for those in the sub-continent. English has achieved global dominance as the most widely spoken language across the globe. British Broadcasting Corporation has successfully reached an astonishing number of 180 million individuals in China who have completed the follow me course. English is spoken by almost everyone educated person in world. English has taken over from French in the realm of diplomacy, German in the domain of science and technology, and Latin in the areas of literature and philosophy. To put it differently, out of every ten individuals, three can converse in English at present with a 60% rise observed in the number of English speakers over the past two decades (Tanveer, 2014).

The significance of English in the contemporary world cannot be denied. Its importance extends beyond professionals and students, encompassing every individual. This crucial factor necessitates the inclusion of English as a mandatory subject in international language courses offered by our government. Apart from its scientific relevance, proficiency in English enables effective communication with people worldwide, emphasizing the indispensability of this global language. Furthermore, English serves as the language of international media and the Internet. While Urdu is the official language of Pakistan, English holds official status in both the private and government sectors. Proficiency in English equips students with the skills necessary to secure high-quality employment opportunities. Undoubtedly, English stands as the most vital lingua franca in the realm of business (Waseem, 2012).

In addition to this, the acquisition of high-quality language skills, particularly in English, is crucial for effective communication and comprehension in the workplace. Consequently, companies are more inclined to hire individuals who are fluent in English, as it enables them to easily engage with international counterparts and fulfil orders from foreign companies. For instance, college graduates who possess English as their primary language tend to outperform their peers who lack proficiency in English, as they are better equipped to produce high-quality work. Moreover, their ability to

access information from foreign sources and navigate websites in English enhances their efficiency in completing tasks. Additionally, many high-quality job opportunities are associated with international collaboration and the exchange of data across the globe. Therefore, individuals working in international companies must possess English language skills to effectively communicate with foreign colleagues. English is widely recognized as the most prominent language in the world, particularly in technical fields (Tahir, 2014).

English plays a pivotal role in facilitating the progress of scientific advancements and technological innovations. In order to delve into any scientific discipline or computer programming language, a profound understanding of English becomes imperative. Presently, our developing nations are ardently striving to acquire proficiency in English as a second language, primarily relying on it as the language of science and technology. Despite our status as developing countries, English consistently emerges as the predominant language within our borders (Tanveer, 2014).

Knowledge of English is essential for exploring the world. English is the language of modern social progress and not being proficient in it can lead to isolation. Without command of English, individuals face numerous challenges in various aspects of life. For instance, students struggle with English at school and are unable to compete with those who have completed O'level and A'level exams. Additionally, excellent English skills are crucial for excelling in this environment. However, the difficulties do not end there. When searching for employment, the real problem arises as English is considered a special language in many communities. Our personality assessment, including our listening, writing, and conversational English skills, greatly influences our prospects. Therefore, it can be concluded that proficiency in English is equally important as practical skills and general knowledge. Similarly, individuals from non-English speaking backgrounds face significant communication challenges when living abroad. To avoid these problems, many people choose to enrol their children in English medium schools, despite the heavy cost. The language barrier further widens the gap between the poor and the rest of society. English is the medium through which scientific, technological, and medical advancements are shared. The latest research is disseminated through English media. Giving up on English would hinder progress in

higher studies. In today's globalized world, the importance of English cannot be overstated as it brings people together like a global family (Waseem, 2012).

2.18 Review of Related Researches

When the researcher went through process of searching and analyzing related studies on the selected problem area, she realized that there was a lack of research and limited academic literature on the impact of Flipped Teaching on students' academic performance, particularly in the subject of English. There was an increasing interest in the field of research on general use and effectiveness of Flipped Learning or Flipped Classrooms. Future research on Flipped Learning should prioritize investigating the potential learning outcomes, taking into consideration the prevailing positive perceptions towards video lectures and increased teacher support. Based on the research evidence, it appears that as future studies progress, there will be an expansion in the range of theories, research methods and learning effects.

The study conducted by Bishop and Verleger (2013) concluded that flipped teaching had positive effect on students to become active learners. Gough et al., (2016) were of the view that techniques focused on flipped classroom have main characteristics of making student active learner as flipped learning has a famous student centered learning focus. This means that students are meant to take a more active role in their learning if they are taught by use of flipped method.

In 2018, Small Horn conducted a study using a flipped learning approach on a second year science group. Instead of traditional lectures, shorter online videos were used, allowing more face-to-face time to be dedicated to interactive learning in a flipped classroom. The findings indicated a rise in student involvement and a favorable disposition towards the learning approach. In 2018, Munir et al. conducted a study within an engineering course. The findings indicated that the implementation of the flipped classroom approach contributed to the enhancement and progression of students' learning capabilities and critical analysis skills. In addition, it had a profound impact on enhancing student engagement and improving learning outcomes.

In the study conducted by Gilbooy et al. (2015), the implementation of the flipped classroom model was explored in two undergraduate nutrition courses. Additionally,

the researchers sought to gain insight into the students' perspectives on this instructional approach. The study's pattern enables the faculty to create activities for use before, during, and after class, as well as assessments that incorporate Bloom's Taxonomy. According to the findings, majority of students expressed a preference for the flipped method in comparison to the traditional classroom approach.

In their study, McLaughlin and Rhoney (2015) investigated the performance, engagement, and perception of students in a neurologic pharmacotherapy course who were taught using a flipped learning approach. The researchers compared outcomes between using an interactive online tool and the more traditional method of distributing paper handouts. The final examination revealed that students who utilized the online tool achieved significantly higher scores.

During one semester of a microeconomics course, Roach (2014) introduced a partially-flipped classroom approach and conducted an analysis to assess students' perception of flipped learning. The flipped classroom received a positive impression from the students at the conclusion of the course.

In 2014, Burt conducted a study on a flipped classroom method wherein the materials of a final year university course were inverted with after-class materials. The flipped classroom structure was evaluated by gathering students' perspectives at both the beginning and end of the semester. The study concluded with the discovery of a notable and positive shift in student perspectives regarding the flipped classroom method.

Flipped classroom model was implemented a flipped classroom model by Love et al., (2014) for one section of an applied linear algebra course, while maintaining a traditional lecture format for the other section of the course. In order to gauge students' comprehension of the content and their overall perception of the course, end-of-semester surveys and exams were meticulously prepared. In a sequence of exams, it was found that students enrolled in the flipped classroom exhibited a greater level of improvement compared to students attending the traditional lecture section. Furthermore, the end of semester survey revealed that students in the flipped classroom had a considerably positive perception of the course.

In their study, See and Conry (2014) introduced an innovative flipped classroom approach tailored specifically for a clinical pharmacy faculty. The faculty teachers had to watch a YouTube video demonstrating how to create a paper crane. Afterwards, they were tasked with constructing their own crane and submitting a picture of it to the facilitators before the deadline. During our class session, we engaged in several activities. First, we had a quiz that tested our understanding of the homework. Afterwards, the faculty teachers evaluated and provided feedback on the cranes we had prepared. Additionally, we engaged in reflection activities as individuals, in small groups, and as a whole class. The faculty's awareness of the flipped classroom approach was effectively heightened by this study.

In the year 2011, Deslauriers and Wieman conducted studies. These studies revealed that flipped learning has a significant effect on the attendance of higher education students. As a result, their attendance in class improves, leading to enhanced learning and engagement. Barkley (2009) and Coates (2006) both have concluded that student engagement is crucial for learning to demonstrate improvement. To put it concisely, student engagement plays a pivotal role in the enhancement of learning outcomes. Bryson and Hand (2007) explained in their study that students are more inclined to participate and invest in their learning when the environment promotes both a welcoming atmosphere and challenges their critical thinking abilities. In their study, Rashid and Asghar (2016) reached the conclusion that the flipped classroom presents itself as a learning model capable of enhancing both student engagement and learning outcomes.

Zappe et Al., (2009) in their study, discovered that the implementation of a flipped classroom approach proved superior in tackling passive learning within higher education classrooms. In a traditional lecture setup, the limited interaction between teachers and students led to passive learning and teaching processes being dominant. In contrast, Long et al. (2017) determined that flipping the instructional content in those same lectures resulted in increased positive interactions between the teacher and the students. The time spent in class not only gave students extra practice and chances to apply what they have learned, it also enhanced their learning experience by making it more interactive and in-depth. This approach was believed to improve students' higher-

order thinking skills, according to the teachers' perspective on the flipped classroom model.

Research of Sohrabi and Iraj conducted in Irani context in 2016 yielded the conclusion that Flipped Classroom was linked to the active learning process. In their studies, Krumsvik and Jones (2016) as well as Helgevold and Moen (2015) highlighted that the primary advantage of the Flipped Classroom approach is the increased availability of teachers during class, which is a significant benefit of the Flipped Learning model. According to a study carried out by Hung in 2015, it was found that both structured and semi-structured flip lessons yielded positive results for students. These lessons not only improved their learning outcomes but also enhanced their attitudes towards learning and motivated them to put more effort into the learning process. In a similar vein, Han (2015) discovered that the flipped classroom had a favorable effect on the autonomy of L2 students. Conversely, the study conducted by Jamaludin and Osman in 2014 demonstrated that emotional engagement is a pivotal factor for active learning to take place. Chen et al., (2018) explained that there is a combination of positive and negative findings regarding the implementation of flipped classrooms. Moreover, it was indicated that visionary students have a preference for interactive and experiential learning methods, which can be facilitated through the implementation of a flipped classroom approach. To cater to the demands of current higher education students, an increasing number of professors are embracing the concept of a flipped classroom. They accomplish this by creating concise lecture videos for students to watch prior to class, allowing the actual lectures to focus on interactive learning experiences and applying knowledge in practical activities. Haghighi et al., (2019) conducted a study to examine how a flipped classroom can improve learners' pragmatic competency. According to the results uncovered, it was found that students belonging to the flipped group exhibited higher levels of engagement with the course material and achieved significantly better results in the post-test compared to their peers in the traditional group. The questionnaires yielded findings that indicated a majority of the participants in the flipped group derived enjoyment from English language acquisition in a flipped learning setting. In a study conducted by Yujing (2015), the objective was to examine the relationship between the flipped classroom approach and how students perceive their level of empowerment in an English writing course in

China. In regards to the flipped classroom approach, the results revealed a significant disparity in its effects among the experimental and control groups.

In 2013, Aronson et al., conducted the research in which students enrolled in flipped courses achieved scores that were over twice as high as students in the traditional learning environment. This remarkable improvement can be primarily attributed to the utilization of interactive learning approaches. Students in the current generation have high expectations for incorporating technology into their education to enhance the learning process. In order to enhance the process of learning, it is imperative for teaching methods to go beyond the traditional approach of lecture-based instructions, as suggested by Ferreri and O'Connor (2013).). The flipped classroom model serves as a learning framework that offers students enhanced assistance, greater adaptability, and heightened efficiency within the classroom, surpassing the advantages of traditional lecture settings. Researchers have stated that with the advancement of technology in flipped learning, students have shown faster progress in their studies. They have also demonstrated a better understanding of various topics and have been able to cover more additional content, all without compromising the quality of the course. This also has been established in studies executed by Barrel et al., (2018), Chao et al. (2015), and Ruddick (2012). Some studies with respect to Science Technology Engineering and Mathematics (STEM) had been executed. In this perspective a study was done by Gough et al., (2016) and effectiveness of flipped methodology was observed. The positive effect of flipped teaching was concluded by Rotellar and Cain (2016). A study in this aspect was also done by Murray et al., (2015) on students' viewpoints about flipped methodology in an Information Technology course at the university level, finding that students generally possessed encouraging inclination towards flipped methodology and showed actively engagement in their learning. A study by Krumsvik & Jones (2016) focused on a middle school class and examined the impact of the Flipped Classroom on students' engagement in a science high school class, which is closely related to the study by Gough et al. (2016). Strohmeyer (2016) and Yarbrow (2014) which were conducted on the subjects of humanities. They were of the view that flipped methodology had enhanced engagement of learners according to opinions and suggestions of teachers.

In the study of Krumsvik and Jones (2016) effectiveness of flipped methodology was checked and they selected science students. The researchers utilized classroom observations. It was revealed that the flipped method led to students' performance in a clear enhancement and improvement. This study's findings also demonstrated a positive impact on the students' academic performance.

Helgevold and Moen (2015) examined the impact of flipped teaching on students' participation in a teacher training course. The research employed both a questionnaire and interviews as data collection methods with the objective of investigating whether the flipped learning approach could improve students' engagement, and participation in class. According to the results, it was found that students experienced enhanced performance and engagement in the classroom.

Numerous studies on flipped method by Warter-Perez and Dong (2015) and O'Flaherty and Fillips (2015) and Murray et al., (2015). In these studies, it has been determined that students typically exhibit favorable attitudes towards the Flipped Learning approach. Johnson and Renner's study in 2012 found contrary conclusions. The findings revealed that students actually have a preference for traditional classroom teaching methods. This preference was attributed to a perceived lack of interest and initiative from teachers in implementing the flipped classroom model, as well as the students' need for a strong work ethic. Students do not always prefer group work and express doubts about the competence of their peers' knowledge (Johnson & Renner, 2012). In terms of student perceptions, the studies executed by Helgevold and Moen (2016) and Strohmeyer (2016) various studies have shown that students report positive experiences with the flexibility and self-regulation afforded by the Flipped Learning approach. The ability to rewind and pause videos is frequently mentioned, and students appreciate the opportunity to learn at their own pace (Gough et al., 2016). Attitudes towards group activities in the classroom, however, vary. Some studies indicate that students enjoy the interactive nature of group work and value the opportunity to collaborate with their peers in the presence of the teacher (Helgevold & Moen, 2015). Students have a general inclination towards live lectures over videos. However, they particularly value the chance to engage in classroom assignments and receive support from both their teacher and classmates (Bishop and Verleger, 2013).

Flipped classroom has gradually become an imperative educational approach in higher education due to several factors. The flipped classroom approach gained popularity in higher education for several reasons, gradually becoming an important method of teaching. To start with, it is expected that all higher education institutions should offer impactful programs and enhance students' learning (O'Flaherty and Phillips, 2015). There has been a growing concern in recent years regarding the quality of higher education and a decrease in student engagement during lectures, both nationally and worldwide. This worry has been highlighted in various studies conducted by Fayombo et al. (2012), Hidayat et al. (2012), and Aronson et al., (2013). The alteration of teaching methods in higher education with time has been prompted by this. The flipped classroom teaching and learning approach, as adopted by numerous researchers (Gillispie, 2016; Jensen et al., 2015; McLean et al., 2016), involves transforming the traditional in-person lecture into a dynamic and interactive learning environment. This method, based on active learning pedagogy, has been proven to significantly enhance students' learning attitudes and outcomes. This approach involves converting the traditional in-person lecture format into a dynamic learning environment, creating a more interactive learning experience. The use of active learning pedagogy in this approach has been found to have a positive impact on students' attitude towards learning and their overall academic results.

In a study conducted by Strohmyer (2016), two classes were observed and interviewed to investigate the implementation of the flipped learning model. The researchers collected the data by conducting individual interviews with students. The conclusions and results of the study showed that employing the flipped learning model led to increased student engagement and success, and a positive reception to the approach.

In 2013, Bishop and Verleger conducted a comprehensive literature review focusing on the research related to flipped classrooms. Flipped classrooms, the various authors' presented definitions, encompass the activities of students and individual instruction in class which was based on computers and individual student instruction based on computer at home by videos. Based on the review, the flipped classroom was generally well-regarded by students. They showed a preference for interactive in class activities over lectures and shorter videos. Nonetheless, the preference of students is

still towards face-to-face lectures rather than video lectures. In addition, the evaluation revealed that there was an enhancement in student learning outcomes in two conducted studies. Nonetheless, it is worth noting that in one study, the flipping of the classroom occurred merely three times alongside incorporating mini-lectures during in-person sessions. Conversely, the other study concentrated exclusively on a computer interaction course at the senior level without presenting enough evidence to substantiate a broad assertion regarding the efficacy of flipped classrooms.

In their comprehensive analysis, Pluta et al. (2013) extensively examined the existing literature on innovative methods in medical education. The authors highlighted the emerging patterns in collaborative learning, which encompassed the adoption of problem-based learning and digital media to augment the dissemination of information beyond the conventional lecture hall environment. When flipped classroom instructional approach, deviating from the traditional method, as it proved to be more successful in actively involving students. Graduate nursing students expressed satisfaction with utilizing a flipped classroom approach that fostered active engagement, culminating in their positive feedback at the conclusion of the course. In addition, teachers in the pharmacy field have also adopted a new instructional method known as the flipped classroom approach. In this method, class lectures are replaced with online videos, allowing students to access and review the material at their own convenience. Classroom time is then used for interactive and engaging learning activities. According to a study by Gilboy et al. (2015), “According to students in the flipped classroom, teachers actively encouraged student engagement and created a more conducive learning environment compared to traditional classrooms.”

Implementation of a flipped classroom approach was done in a nursing course by Simpson and Richards (2015) and it was conducted that better results were due to flipped methodology. Learners were showing more performance and understanding of curriculum by flipped technique. Flipped method was liked by majority of students. As they showed preference of this method over traditional method. It was done on students’ likeness of curriculum.

According to Critz and Knight (2013), teachers from various countries have embraced the flipped classroom approach since it was introduced in higher education.

This teaching method is widely used in different healthcare fields such as medicine, nursing, and pharmacy. It has been shown to enhance interactions between students and teachers, provide immediate feedback, and boost student involvement.

Ruddick (2012) conducted a study in which he taught a college prep chemistry class using the flipped classroom model, and found that students in this class scored higher on exams compared to those in a traditional classroom setting. He demonstrated that implementing a flipped classroom approach can lead to significant improvements in students' content knowledge and overall comprehension. Additionally, a study conducted by Talley, (2013) revealed the conclusion that flipped methodology was more effective in students' active learning and scores. It is clear from this finding that flipped methodology is superior over traditional learning environment.

Enfield's (2013) study on the effectiveness of Flipped Learning among undergraduate students in a multimedia class revealed that a significant majority of students (73.5%) reported feeling more confident in their ability to learn new material on their own after participating in Flipped Learning, as opposed to a formal class instruction model. Additionally, the study found that majority of students reported an increased likelihood of using instructional videos to learn new topics after being introduced to the Flipped Classroom, with none reporting a decreased likelihood. Despite occasional technical issues with video streaming and downloading, very less students reported negative impacts on their learning, while almost half of students found the issues to be annoying but not detrimental, and one quarter of students did not find them to be annoying at all.

According to Mason (2013), it is suggested by evidence that students need to spend less time studying outside the classroom when they are engaged in activities of flipped methodology. For instance, while comparing flipped methodology and traditional methodology, it was found that those in the traditional classroom setting dedicated an average of 7 hours per week to studying, while students in the flipped classroom setting reported spending 46% less time studying. Mason (2013) further described that individuals typically spend an average of 5 hours per week. It may be due to over burden or work load due to flipped classroom setting and videos given to students for home.

Research studies on Flipped Teaching have shown that students have a positive association with this instructional method. According to study of Herried (2013) it was concluded that flipped teaching was more influential for students. A college architecture class was flipped by Zappe (2009) and a college prep chemistry class was flipped by Ruddick (2012), both of which resulted in students perceiving the flipped instruction as a superior and more efficient teaching approach. Furthermore, According to Chester (2011), the implementation of a flipped classroom approach was found to significantly improve students' attitude towards learning. Pierce and Fox (2012) applied a flipped classroom strategy in their renal pharmacotherapy course. They offered students' video podcasts of lectures to view ahead of time, and urged them to utilize their understanding by taking part in interactive patient case scenarios during class. The results of the course indicated that students in the flipped classroom attained considerably higher scores in comparison to their peers in the traditional class.

In one of her chemistry courses, Ruddick (2012) implemented the flipped classroom instruction method. In the flipped classroom approach, students were presented with teacher-made videos for lesson instruction, which they could watch at their own pace from home. This way, they utilized the time spent in class for engaging in classroom activities. The final exam scores were compared between students in the flipped classroom and those in the ordinary classroom setting. According to the findings, the students who engaged in flipped learning outperformed their counterparts who followed traditional lecture-based instruction, achieving higher scores on their final exams and experiencing overall success in the course. A study conducted by Johnson and Renner (2012) explored the impact of the flipped classroom model on a computer applications course in a Kentucky high school. This investigation took place during the 2010-2011 academic year. The study lasted for a period of six weeks, with two groups participating. One group received instruction through the flipped classroom method, while the other group received instruction through traditional classroom methods. Johnson and Renner (2012) found that the t-test results comparing the post-test scores of students in the flipped teaching group and traditional teaching group did not reveal significant differences.

According to study by Gaughan (2014), a majority of respondents expressed that the videos were beneficial in their preparation, either frequently or consistently.

21% of the respondents stated that the videos provided little assistance in preparing for the upcoming class. According to the survey, a number of students confessed struggling with watching the videos in advance, resulting in their lack of preparedness for the subsequent lecture. Despite majority of students indicating that they watched all of the videos, a few students mentioned that they could not watch full videos. The flipped classroom was deemed a “success” as most of students actively participated in class discussions and displayed enthusiasm and understanding.

In 2012, Basal conducted the implementation of a flipped classroom in English Language classes and provided some suggestions. The findings revealed that a significant number of students viewed the flipped learning approach favorably. Students showed enthusiasm and positive attitude towards flipped teaching. Students’ inclination was towards active engagement in discussions in classrooms. Responses of students were in favour of implementation of flipped strategy. The conclusion was supported by the researcher’s analysis of the students’ reflective responses.

Another study, conducted by Nicolosi (2012) and cited in Ekmekci (2014), explored the use of flipped classroom techniques for grammar teaching. The researcher underscored the misconceptions surrounding flipped classrooms by elucidating that they are not solely centered on watching videos at home and completing assignments in class. Rather, they entail a significant shift in mindset regarding the delivery of instruction and the learning process of students. When the researcher started using flipped grammar lessons, she discovered that this method allowed her to better recognize the meta-cognitive abilities of her students. In addition, she mentioned that the students were able to receive teacher support as needed with the implementation of the flipped model.

Similarly, the impacts of flipping the classroom on English language learners’ academic performance, participation levels, and learning attitudes were explored by Hung (2015). The researcher discovered that by creating three distinct formats for flipped teaching, learners were able to achieve improved outcomes, cultivate positive attitudes, and dedicate more effort to the learning process. The structured and semi-structured flipped lessons in particular proved to be highly effective in fostering these benefits. In a more recent study, Bauer-Ramazani et al. (2016) made an attempt to

define and describe the concept of flipped learning. They also delved into the potential of this approach to enhance language acquisition among Teachers of English to Speakers of Other Languages. The possible benefits and challenges of the new method were also reported by them. In a study by Perez and Riveros (2014), the focus was on examining the experiences faced by both teachers and learners in a Colombian higher education institution during two semesters using flipped classrooms. The study's findings indicated that both students and teachers successfully embraced new environments and tools, strategically utilized the resources at hand, and demonstrated ingenuity. The success of students was attributed to their belief in their own abilities, their ability to regulate themselves, the personalized tutoring they received, and the continuous interaction with their teachers.

In a study conducted by Huang and Hong (2015), the focus was on investigating the effects of a flipped English classroom on the use of technology related skills and reading comprehension of students. After undergoing the flipped learning treatment process, it was found that students' preference was towards use of technology and also students exhibited a significant improvement in reading comprehension skills. A comprehensive survey conducted by Bishop and Verleger (2013) encompassing flipped classroom practices unveiled a wide range of sentiments regarding the substitution of attending lessons with online video viewing. On the whole, the participants expressed a favorable attitude towards participating in group activities during class (Bishop and Verleger, 2013). Students like flipped classrooms and activities of this classroom are found to be advantageous for students' learning process (Musib, 2014). Findlay-Thompson and Mombourquette (2014) discovered diverse perspectives among students when examining the use of the flipped classroom method in a university course. However, they noted that students in a flipped classroom setting had increased opportunities for engaging with their professor and classmates, in contrast to a traditional classroom setting.

McLaughlin et al., (2014) explained that related to the development of generic skills, another advantage of a flipped classroom can be observed. An additional advantage of implementing a flipped classroom approach is its connection to the enhancement of generic skills. In order to develop generic skills such as communication and collaboration, students can enhance their abilities by engaging in interactions with

professors or peers, and by participating in group tasks. It was concluded that the flipped classroom approach was found to enhance students' comprehensive comprehension of knowledge and concepts. Moreover, it also proved to be an effective teaching method for teachers. According to Dianati et al., (2020), when the flipped classroom pedagogy was used in teaching learning experiences elicit a greater level of student involvement. Students were deeply involved in learning. Better achievement of students was indicated by flipped method.

According to Musib (2014), students favour flipped classrooms and in this classroom students exhibit greater preparedness for class when they are provided with video lectures instead of textbook readings. DeGrazia et al., (2012) indicated same findings that students' are inclined towards active learning when they watch videos. According to Mok (2014) and Musib (2014), the utilization of pre-recorded lesson videos in flipped teaching led to students having ownership of their learning. The ability to watch online videos repeatedly has proved beneficial for slow learners, enabling them to review the lesson content until they have fully grasped it.

In a study conducted by Kong in 2014, a flipped classroom model was implemented for an integrated humanities subject. The trial study lasted for 13 weeks in two academic years. Particularly, 107 students from four Secondary classes participated in this study, and the findings revealed significant improvements in domain knowledge. Specifically, the students demonstrated enhanced information literacy competency and critical thinking skills. According to Al Zahrani (2015), the flipped classroom approach was seen as beneficial for students' learning. She observed the effectiveness with respect to creativity. This was supported by her study in which students of higher education demonstrated the ability to apply the subject knowledge they had learned independently to real-life scenarios. This method proved fruitful in enhancing their creative power. It enhanced their creativity. On the other hand, according to a study conducted by Guy and Marquis (2016), it was found that students in a flipped classroom environment performed marginally better than those in a traditional lecture-based instructional method. The difference was not much but it was marginal. Zainuddin (2017) found that students' inclination was towards flipped classroom. Students liked flipped strategy.

The findings from Roehl et al. (2013) and Vaughan (2014) suggest that the flipped teaching method enhances students' expression and cultivates their reflective skills by emphasizing reflection in connection to classroom learning materials and activities. In the study of McLaughlin et al. (2014), nearly all students were agreed that due to flipped classroom they developed knowledge and skills and these would be beneficial for them in future. According to research of Musib (2014), a majority of students expressed strong agreement towards the continuation of the flipped classroom approach by course teachers, whether in this specific course or in other courses as well. According to a study conducted by Guy and Marquis (2016), the flipped classroom environment was favored by a large majority of the students surveyed, while only a small percentage preferred the traditional learning method. Zainuddin and Attaran (2015) concluded that students preferred flipped classroom and found it better for learning.

Hashemefardnia et al., (2018) revealed that flipped teaching had much promised results on learning of students. Estrada in 2019 executed a study in which was concluded that students focused learning and performance of students of university were improved by flipping class. The study conducted by Loizoiu and Kyubgmei in 2020 resulted in favor of potential outcomes of flipped based class. Higher level cognition was developed by flipped methodology. It was revealed by conclusions of William et al., (2020), flipped methodology showed superiority over traditional classroom and accounting students enhanced performance was seen. In Covid 2019 in classroom, use of flipped methodology resulted in higher performance of students as found by Beasson et al. in 2021. They found better performance of students by online and flipped methodology. In similar way, in study of Wayatt (2021), flipped methodology proved effectiveness over traditional methodology in period of Covid. In the study of Zhui (2021), main conclusion was that numerous studies manifested enhanced performance of students by flipped methodology when it was used verses traditional methodology. According to Khoasa and Burich (2023), students' relatedness cognitive needs, autonomy and competence was enhanced by flipped teaching with respect to motivation. According to the findings of the study of Ayberdi et al., (2023), most of the meta-analysis manifested that flipped teaching had influential effect on learning of students.

Quality teaching is the heart and soul of education system of any country. Quality of education is directly dependent on quality teaching. In foreign countries, trend of their researches is towards investigating effectiveness of innovative methods of teaching. Their researchers are taking into account the newly introduced methods of teaching and their effectiveness in terms of achievement, motivation, attitude, learning engagement, creativity of students. This review of related studies indicated that there is dire need of a study to assess the comparative effectiveness of flipped teaching with traditional teaching in Pakistan. Keeping in view the review of previous researches and as far as knowledge and information of the researcher is concerned, any study on effect of flipped teaching approach on academic achievement of students in Pakistan at secondary level has not been executed. Thus present study served as contribution in the field of knowledge and research with respect to Pakistan.

2.19 The Concluding Remarks on Review of Literature

The literature review in this chapter provides an overview of the two main components of the study: Flipped Teaching Method and Traditional Teaching Method. Flipped Learning, an innovative teaching style, has gained significant popularity in recent times. As the popularity and media coverage surrounding flipped learning have increased, there has been a consequent surge in both the promotion and adoption of the flipped classroom model. The innovation in education has been made possible by the convergence of technologies that has occurred in the past few years. In Pakistan there is no use of Flipped Method in teaching of English. Traditional method of teaching English is known as Grammar Translation Method. In Pakistan, it is based on back to back translation from English to Urdu and from Urdu to English. It is used more frequently and it is common in Pakistan.

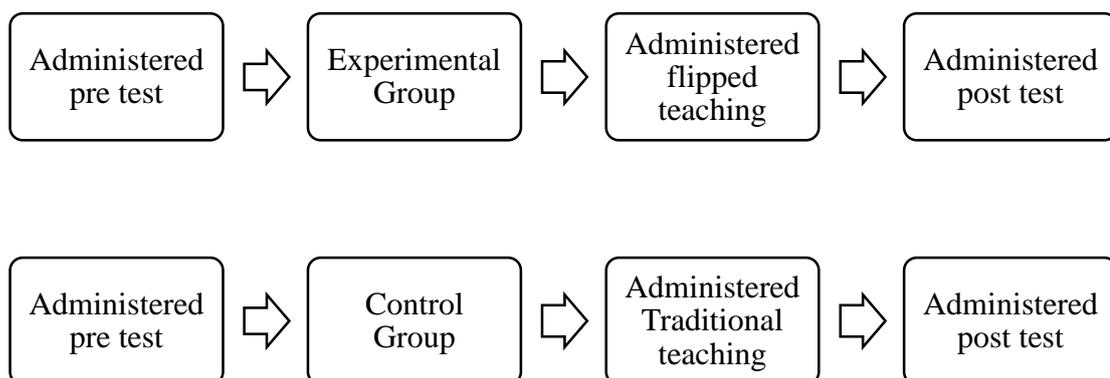
CHAPTER 3

RESEARCH METHODOLOGY

The researcher followed following methodology in this research.

3.1 Research Design

The foremost aim of the study was to investigate the impact of flipped teaching on the academic performance of high school students studying English. The researcher conducted a comparison between the academic performance of secondary level students in English, when taught through the flipped teaching approach and the traditional teaching approach. This study was an experimental study in nature and research design used for experimental research was pretest posttest equivalent group design which is as following:



(Figure 3.1, Pre-Test Post-Test Equivalent Group Design, by Farooq, 2001)

3.2 Philosophical Research Paradigm

The term “paradigm” in social research refers to the philosophical assumptions or basic beliefs that shape a researcher’s actions and worldview. It was well explained by Morgan in 2014. It is known as the shared generalizations, beliefs, and values of a community of specialists regarding reality and knowledge. A philosophical base and foundation on which any research is based is called research paradigm. This research was experimental. Pragmatism philosophical thought was research paradigm of this research. The ontology, axiology and epistemology of pragmatism is based on

experiment. Key element of Pragmatism is to find the truth, reality, value and worth of knowledge through experiment.

3.3 Population

All 62 male and 72 female students studying in 9th class at Unique Public Secondary School Kallar Kahar (Chakwal) comprised the population of the study. Target population of study was sixty male and sixty female students of 9th class which were selected for experiment in selected school.

3.4 Sample and Formation and Equivalence of Groups

Sixty male and sixty female students were randomly selected for the experiment. Pre-test was administered. Students were categorized as student number from 1 to 60 on the basis of pre-test marks (from the highest to the lowest 1 to 60). Students were divided into control and experimental groups by paired random sampling. The criteria of division and matching was marks of students on pretest. Top 10 were taken as high achievers, medium 10 were taken as average achievers and the lowest 10 were taken as low achievers. Paired random sampling technique was used.

Table 3.1

Sample of male (60 students)

Gender ⇨	Male			Total
Sample Size ⇩				
Control Group	30			30
Academic Achievement Wise	High Achievers	Average Achievers	Low Achievers	
Trifurcation	10	10	10	
Experimental Group	30			30
Academic Achievement Wise	High Achievers	Average Achievers	Low Achievers	
Trifurcation	10	10	10	
All male students				60

Table 3.2

Sample of female (60 students)

Gender \Rightarrow	Female			Total
Sample Size \Downarrow				
Control Group	30			30
Academic Achievement Wise Trifurcation	High Achievers	Average Achievers	Low Achievers	
	10	10	10	
Experimental Group	30			30
Academic Achievement Wise Trifurcation	High Achievers	Average Achievers	Low Achievers	
	10	10	10	
All female students				60

Table 3.3

Distribution of Male students

S. No.	Achievement Levels	Control Group	Number of Students included	Experimental Group	Number of Students included
1	High Achievers	1,3,5,7,8,10, 12,13,15,17,20,	10	2,4,6,8,9,11 14,16,18,19,	10
2	Average Achievers	22,24,25,28,29 32,34,35,38,39	10	21,23,26,27,30, 31,33,36,37,40	10
3	Low Achievers	42,44,46,49,51, 52,54,56,57,60	10	41,43,45,47,48, 50,53,55,58,59	10

Table 3.4

Distribution of Female students

S. No.	Achievement Levels	Control Group	Number of Students included	Experimental Group	Number of Students included
1	High Achievers	2,3,6,7,10, 11,14,15,18,19	10	1,4,5,8,9, 12,13,16,17,20	10
2	Average Achievers	21,24,26,27,30, 32,33,35,38,39	10	22,23,25,28,29, 31,34,36,37,40	10
3	Low Achievers	42,43,46,47,50, 51,54,55,58,59	10	41,44,45,48,49, 52,53,56,57,60	10

3.5 Variables

Following variables were dealt in this study.

3.5.1 Dependent Variables

Academic scores i.e. academic achievement of students was dependent variable.

3.5.2 Independent Variables

Two teaching methods were independent variables of the study.

3.5.3 Controlled Variables

Periods in a week, duration of period, experiment duration, teaching methods, classroom conditions and environment, English subject, number of students in each group, students' average age were controlled variables of study.

3.5.4 Uncontrolled Variables

Students' motivation level, students' anxiety level, students' status regarding socio-economics, students' reading habits, and parents' education level were uncontrolled variables of this research.

3.6 Threats to Internal Validity

Following were threats to internal validity of the experiment and the researcher took following measures to invalidate the effects of these factors.

➤ **History as Threat**

During a study, any incident that is not a component of the experimental treatment but has the potential to impact the dependent variable's performance is referred to as history factor. The researcher ensured that both the experimental and control groups were exposed to the same environments and external events. Additionally, the history factor was controlled by conducting the experiment in eight weeks period, which was neither too brief nor too extended.

➤ **Maturation as Threat**

Participants in an experiment may become more mature or change during an experiment thus it influence the study results and this is called maturation factor. As the students involved in the experiment were all of the same age group, they matured at a consistent rate throughout the duration of the study.

➤ **Testing as Threat**

Participants may exhibit enhanced performance on a posttest due to the administration of a pretest, which is known as testing. Also called pretest sensitization. To ensure the accuracy of testing variables, both pretest and posttest were conducted in equal and same conditions with an interval of 8 weeks. This time frame was chosen to avoid any significant improvement in academic achievement scores on the posttest due to a too short or too long gap between the two tests.

➤ **Instrumentation as Threat**

The potential for inaccurate evaluation of participants' performance arises from the unreliability of measuring instruments. This unreliability, also known as lack of consistency, can lead to an invalid assessment of respondents' performance.

The researcher employed tests that were both reliable and valid, ensuring the accuracy of the assessment. Furthermore, the pre-test and posttest were designed to have an equivalent level of difficulty. In the post-test, the questions or test items were rearranged and their sequence was shuffled.

➤ **Statistical Regression as Threat**

The phenomenon of individuals who perform exceptionally well on a pretest exhibiting a decline in performance on a posttest, and those who perform poorly on a pretest exhibiting an improvement in performance on a posttest, poses a significant challenge to the internal validity of a study. This is called statistical regression factor. The issue of statistical regression is not a concern in this study as the selection of participants was not based on their extreme scores.

➤ **Selection i.e. Differential Selection as Threat**

The presence of dissimilarities among subjects at the commencement of a research study, which could potentially contribute to variances observed on a posttest, poses a threat to the study's internal validity. This is called selection or differential selection. To mitigate this selection bias, the selection factor was regulated by ensuring that participants in two experimental groups and a control group were comparable in terms of their abilities. This was achieved by selecting individuals who had similar pretest scores, indicating comparable levels of achievement.

➤ **Mortality i.e. Experimental Mortality as Threat**

It is also called attrition. The phenomenon, the reduction in the number of research participants over time due to dropouts, poses a potential threat to the internal validity of a study. This is because individuals who choose to drop out may possess a shared characteristic, and their absence from the study can potentially influence the study's results in a significant manner. In the present study, however, all subjects remained engaged in the experiment and participated in the posttest, thereby mitigating the issues associated with experimental mortality. Notably, no student remained absent or dropped out during the course of the experiment.

➤ **Interaction among Factors as Threat**

If effects of selection also called differential selection interact or intermingle or interrelate with other internal validity threats as maturation, history, or testing and

this interaction/intermingling/interrelation affects results of study, it is called interaction among factors. To mitigate the influence of various factors, the formation of ability groups was employed, ensuring equal distribution in terms of ability, age, randomization, and the time gap between the pretest and posttest. Additionally, both tests were designed with an average level of difficulty to assess identical abilities, thereby neutralizing the potential interaction among these factors.

3.7 Threats to External Validity

Following were threats to external validity of the experiment and the researcher took following measures to mitigate the effects of these factors.

➤ **Pretest Treatment as Threat**

The occurrence of subjects responding or reacting differently to a treatment due to being pretested is known as the phenomenon of reactivity. This reactivity poses a threat to the external validity of the study. To mitigate this threat, an unseen pretest was administered to the students. The same test was then conducted as a posttest, with the alteration of question order.

➤ **Multiple Treatment Interference as Threat**

The issue of carryover effects from a previous treatment leading to challenges in evaluating the efficacy of a subsequent treatment is a common phenomenon and poses a threat to the external validity of the study. It is noteworthy that the participants in this research were not engaged in any other study.

➤ **Selection Treatment as Threat**

The inclusion of non-representative groups in a study can lead to a phenomenon where the study's results only apply to the specific groups involved and do not accurately represent the treatment effect in the overall population. This poses a threat to the external validity of the study. To ensure equivalence among the groups, the students were divided based on their pretest marks, and paired random sampling was subsequently employed.

➤ **Specificity of Variables as Threat**

The generalizability of the results is influenced by the specific subject, measuring instruments, time, and circumstances involved in the study and this factor is called specificity of variables factor which is threat to external validity. The experiment was conducted during the months of October-November of the academic session

2022-2023, lasting for a duration of eight weeks. The criteria for the pretest, posttest, and retention test were identical, including the duration of the periods, the number of periods, and the clarity and definition of the marking. As a result, there was no interaction between the history factor effect and the effect of treatment. Additionally, the tests were administered on the same day and at the same time.

➤ **Experimenter Effect as Threat**

When researcher serves as teacher in one group, then bias comes and it serves a threat. The researcher did not serve as teacher of experimental group.

➤ **Reactive Arrangements as Threat**

Threats to the external validity of a study arise from the manner in which the study is conducted and the emotions and attitudes exhibited by the subjects. These phenomena are commonly referred to as participant effects. In order to minimize the Hawthorne effect, John Henry effect, placebo effect, and novelty effect, the environmental conditions for the control and experimental groups were kept as similar as possible. Both groups were taught the same contents and maintained at the same situations, same temperature, same school, and same environment. The study lasted for two months, providing sufficient time to reduce the effect of novelty and special effort on the part of the experimental group participants. The control group students were taught conventionally, while the experimental group students were taught through flipped teaching method. Both groups were kept unaware of any comparison with the other group. The principal of the school ensured strict implementation of the specified lesson plans by the control group teachers, minimizing the John Henry effect. There was no involvement of the placebo effect in this study as the control group students all received the conventional teaching method, while the experimental groups were extensively instructed using the flipped teaching method. The study's duration 8 weeks also helped to reduce the novelty effect of the treatments, as the participants had sufficient time to become accustomed to the new teaching methods.

3.8 Research Instruments

For data collection, pretest, posttest and retention test served as research tools of this study. The researcher developed the research instruments in various steps with careful considerations.

3.8.1 Preparation of Tests

A test whether it is pretest or posttest or retention test, holds vital impact in experimental research because these serve as backbone of experiment because these are data collection tools in experimental research. The development of tests holds pivot position and vital step in experimental research. Preparation and development of tests was done very carefully and it went through following phases.

Phase 1:

At first step, the researcher took previous papers of 9th grade English from the BISE Rawalpindi. In these papers, it was observed that only first three levels or four levels of Bloom Taxonomy had been focused. Researcher had to focus on all levels of Bloom Taxonomy because it was demand of the study. With the help of two experienced English teachers, researcher developed pretest by focusing on all levels of Revised Bloom's taxonomy. This pretest was developed from selected contents of English subject at secondary level with clear guidance and consultation of supervisor. Eight lessons were selected for experiment and the pretest was constructed from these selected units.

Phase 2:

The researcher approached two English teachers who have been serving as paper setters and paper markers of Board of Intermediate and Secondary Education Rawalpindi. The researcher showed developed tests to them on order to get feedback from them. They checked the pretest keenly and thoroughly and provided their valuable suggestions.

Phase 3:

Keeping in view all recommendations and considerations given by these teachers and experts, the researcher improved and developed final tests.

3.8.2 Validation and Reliability of Test

Validation and reliability of test is the basis of experiment. If the test has any sort of shortcoming in validity or reliability, all experiment goes useless. For validation and reliability of research instruments, following procedure was used.

3.8.2.1 Validation of pretest

Firstly pretest was developed. Then its content validity was established by showing it to two teachers of English who had experience of English teaching for 15-20 years. They found it appropriate. It was also discussed with two teachers who had been serving as paper setters and paper markers of secondary level in BISE Rawalpindi. These teachers as experts found the pretest suitable.

Researcher approached three Ph.D. Education as experts for validation of test. The researcher developed test very carefully from all eight units selected to be taught in experiment. The experts were asked to check the content validity of the test from eight units. Content validity of test was fully focused by these experts. They checked test thoroughly and division of items of tests with respect to lessons that will be taught were also thoroughly checked. They after keen observation regarding validity, approved the test.

3.8.2.2 Reliability of the pretest

Pilot testing was done on twenty students. These students were from another school of Kallar Kahar. Test-retest method along with Split half method and Cronbach Alpha were used to assess reliability of test.

Table 3.5

The Cronbach Alpha Reliability of Pre Test, Post Test and Retention Test

Serial No.	Level of Bloom Taxonomy (Revised)	Items	Cronbach Alpha Reliability
1	Remember	15	0.90
2	Understand	15	0.87
3	Apply	15	0.86
4	Analyze	6	0.83
5	Evaluate	2	0.78
6	Create	2	0.74
	Total	55	0.81

The reliability of achievement pre-test was also measured by test-retest method on some students of other school than sample. Cronbach alpha was also calculated in

order to determine reliability. Further, for the Remember level value of Cronbach alpha was ($\alpha=0.90$), for Understand level it was ($\alpha=0.87$), for Apply Level, it was ($\alpha=0.86$), for Analyze level it was ($\alpha=0.83$), for Evaluate level it was ($\alpha=0.78$), for Create level it was ($\alpha=0.74$). The Cronbach alpha for total test items was 0.81.

Table 3.6

The Marks' Specification and Marks' Percentage of Pre Test, Post Test and Retention Test

Serial No.	Level of Bloom Taxonomy (Revised)	Items	Marks	Percentage
1	Remember	15	20	20
2	Understand	15	20	20
3	Apply	15	20	20
4	Analyze	6	20	20
5	Evaluate	2	10	10
6	Create	2	10	10
	Total	55	100	100

3.9 Procedure of the Study

Procedure of study involved the following steps.

3.9.1 Selection of school

One of the main steps in experimental research was selection of appropriate school which has required number of students both male and female at secondary level. The researcher visited many schools of Kallar Kahar (Chakwal) and finally selected Unique Public Secondary School Kallar Kahar (Chakwal). The researcher requested the

principal through supervisor to give her permission to complete her research in his school.

3.9.2 Selection of teachers for the experiment

The researcher conducted experiment in the school where all teachers of that area had already received training by an NGO on effective use of innovative methods of teaching including Flipped classroom strategy. The selection criteria for teachers included the following:

- They were regular teachers at the selected school.
- They possessed same level of academic qualifications, specifically a Master's degree in English.
- They had equal level of professional qualifications, either a B.Ed. or M.Ed./M.A. in Education.
- They had equal years of experience teaching English to secondary classes.
- They expressed willingness to participate in this study.

The teachers who taught the flipped method group had the necessary knowledge and skills required for the flipped method because they had received training from an NGO on modern and innovative teaching methods, including the Flipped Method. The researcher also provided guidance on flipped teaching to these teachers.

Two teachers for each group of male and female from Unique Public Secondary School Kallar Kahar (Chakwal) fulfilled these criteria. All four teachers were M. A. English and they had B.Ed. as their professional qualification. These four teachers possessed almost equal English teaching Experience to 9th class.

The flipped teaching was implemented with full protocol and its real essence. The students of experimental group were exempted from home work. The most appropriate and related videos, material, notes and PPTs were selected by researcher for flipped teaching group. Lessons plans on each selected unit were carefully prepared by researcher. Every student of flipped teaching group was given proper attention. Teachers give individual attention to each student. Every student had freedom to ask question from teacher which difficulty he/she faced at home when watched video or read material or notes. The points he/she did not fully grasp in mind were discussed in class. Every difficult step which was pointed out by students that he/she did not understand when he/she watch videos and read material or notes at home was explained

by teachers of flipped teaching group. Right guidance at right time was provided by teachers. Appropriate guided discussions and class activities were carried out by male and female teachers of flipped teaching group. Male and female teachers of flipped teaching groups involved all students in classroom discussions. It is soul of flipped method that teachers role must be as guide and facilitator. Male and female teachers played honestly and keenly their role as facilitators and guide. All variables of the study which could be controlled were kept under control to the maximum extent. All threats which are harmful to validity of experiment whether they were internal or external, all were taken into consideration and minimized. The researcher visited daily school and observed that both methods traditional and flipped were being taught and executed with their full protocol.

3.9.3 Equivalence of academic opportunities

In the months of October and November 2022, these two parallel experiments on male and female students were conducted in selected school. Duration of a period was 45 minutes. These duration of a period was same for both groups. The experiments lasted for 8 weeks and 6 periods daily in a week 6 day. These were also equal and same for both groups. Eight lessons were taught. Thus one lesson was taught in one week. The researcher provided equal academic opportunities to both groups. Conditions and environment was also same. In these aspects, the principal of the school cooperated with zeal and devotion.

- The teaching schedule remained consistent with an equal number of hours and days allocated.
- The number of chapters taught were same.
- The duration and timing of each teaching period was equal and same.
- Additionally, the timing of administering pre-test, post-test, and retention test remained same.

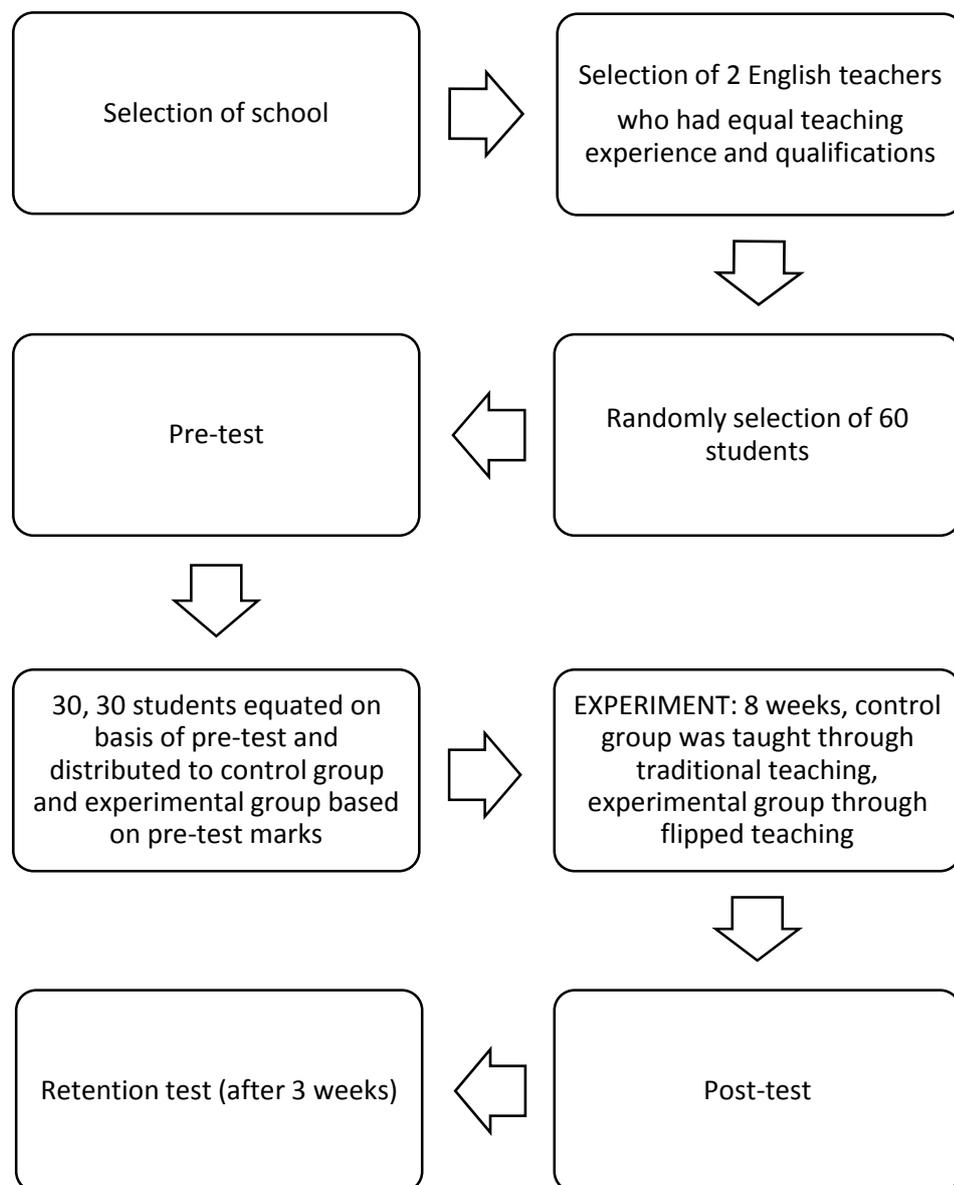
3.9.4 Ethical considerations

Ethical considerations are very essential for research. All students who were participating in experiment, their willingness in the form of written consent was taken from their parents through principal. Parents of these students were requested not to send their sons and daughters to tuition academies or involve in home tuition for next three months. The students were also strictly told by principal not to take tuition of

English for next three months. Their parents promised to do this. Also it was ensured to students that researcher will allot student number against their names. Their names will not be shown.

3.10 Experiment

For male as well as female students, following flow chart of research was followed:



(Figure 3.2: Flow Chart of Study, Devised by the Researcher Herself)

Eight chapters of 9th class English by Punjab Textbook Board, Lahore 2021-2022 were taught, that are listed below:

Lesson No: 1 The Saviour of Mankind

Lesson No: 2 Patriotism

Lesson No: 3 Quaid's Vision and Pakistan

Lesson No: 4 Hazrat Asma

Lesson No: 5 Daffodils

Lesson No: 6 Sultan Ahmad Mosque

Lesson No: 7 Active Voices and Passive Voice

Lesson No: 8 Tenses

3.10.1 Flipped teaching

The researcher tried her best to implement flipped teaching methodology with full essence and protocol. All videos, notes and material given to students of flipped teaching group were selected very carefully. The principal and staff of the school cooperated much to their full extent. All the selected students were ensured that they have computers, CD/DVD players, laptops or mobiles at their home. CD/DVD. All lectures, videos including power point presentation, notes, related material with videos were photocopied for all students of flipped teaching group because if there is net problem on some times, this problem might not affect flipped teaching group's students study at home which is backbone of flipped teaching. The teacher of flipped classroom was provided printed copies of all notes, videos and related material before starting the formal session.

- **Pre-Class:** Various notes, materials and videos were given to students for home. It was instructed to them to watch video and read notes and material and focus on these points. What was main idea/theme in video, notes and material?

What were main concepts in video, notes and material? What points/concepts you did not understand? What were points/concepts you understood easily?

- **During Class:** The teacher of flipped teaching group engaged students in active discussion and also make their groups.
- **Post Class:** Teacher asked students the questions which were initially told by teacher to do at home when they watch video or read notes and material. Now teacher asked one by one those four questions from students. What was main idea/theme in video, notes and material? What were main concepts in video, notes and material? What points/concepts you did not understand? What were points/concepts you understood easily? The teacher guided and made clear all these concepts and details of videos, notes and material to students.

3.10.2 Traditional teaching

Traditional teaching group was treated as usual routine teaching of English. Grammar Translation Method was mostly used by the teacher as in Pakistan traditional teaching of English is based on Grammar Translation Method. Students of control group were given home work as usual. The students who were not randomly selected as 30 students of control group and experimental group from male as well as female students, they studied in the traditional teaching group during experiment. Their tests were taken but their marks were not included in data analysis.

3.11 Collection of Data

Data were collected by three tests. Pretest was given before start of experiment. Posttest was given at end of experiment. Retention test was given after three weeks of completion of research. The researcher prepared a key and scoring rubrics for marking of pretest, posttest and retention test.

3.12 Analysis of Data

Data was collected by researcher on pretest, posttest and retention test. Students were divided in three sub groups i.e. high achievers (10 highest rank wise achiever students number 1 to 10 from 30 students), average achievers (10 medium rank wise

achiever students number 11 to 20 from 30 students) and low achievers (rank wise lowest achiever students number 21 to 30 from 30 students). This division was made on the basis of pretest scores.

- To examine significance and difference between means t test (Independent) was used.
- To examine level of effect, “Cohen’s d” test was used.

Following two rules were followed as decision rules for t test and similarly these two rules were followed for acceptance or rejection of hypotheses:

DECISION RULE (t test) statistically difference between means when $df=58$ and if $t > 2.00$

$\alpha = 0.05$ with $df = 58$, Hypothesis will be rejected when $t > 2.00$

DECISION RULE (t test) statistically difference between means when $df=18$ and if $t > 2.10$

$\alpha = 0.05$ with $df = 18$, Hypothesis will be rejected when $t > 2.10$ (Gay, 2012).

Following was decision rule about Cohen’s d:

If $d =$ or > 0.20 then effect will be small.

If $d =$ or > 0.50 then effect will be moderate/medium level effect.

If $d =$ or > 0.70 then effect will be large/high level effect (Cohen, 1988).

CHAPTER 4

ANALYSIS AND INTERPRETATION OF DATA

The main aim of this study was to examine the effect of flipped teaching on academic performance of 9th class students in English. Data analysis and interpretations are presented below:

4.1.1 Analysis of Data of Male Students

Analysis of Data of Male Students on Pre-Test

Table 4.1

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	39.93	8.9131				
				0.001456	0.98845555	0.0038	No
Contr.	30	39.96	8.8258				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.1 shows that on pretest, male students of flipped teaching method secured mean scores 39.93 whereas male students of traditional teaching method secured mean scores 39.96. The standard deviation of male students taught through flipped teaching was 8.9131 while standard deviation of male students taught through traditional method was 8.8258. As t value calculated (0.001456) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9884. Cohen's d value was 0.0038. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.2

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of High Achiever Male Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	50.40	3.9214				
				0.06038	0.9525	0.0027	No
Contr.	10	50.50	3.4721				Effect
df=18							

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.2 shows that on pretest, male students taught by flipped teaching method secured mean scores 50.40 whereas male students taught by traditional teaching method secured mean scores 50.50. The standard deviation of male students taught through flipped teaching was 3.9214 while standard deviation of male students taught through traditional method was 3.4721. As t value calculated (0.06038) was lower than t value tabulated (2.10) at 0.05. And p value was found to be 0.9525. Cohen's d value was 0.027. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.3

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Average Achiever Male Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	39.20	3.1902				
				0.07182	0.9435	0.032	No
Contr.	10	39.10	3.0349				Effect
df=18							

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.3 shows that on pretest, male students taught by flipped teaching method secured mean scores 39.20 whereas male students taught by traditional teaching method secured mean scores 39.10. The standard deviation of male students taught through flipped teaching was 3.1902 while standard deviation of male students taught through traditional method was 3.0349. As t value calculated (0.07182) was lower than t value tabulated (2.10) at 0.05. And p value was found to be 0.9435. Cohen's d value was 0.032. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.4

Comparison of Mean Scores and Effect Size of Flipped Teaching and Traditional Teaching of Low Achiever Male Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	30.20	1.6865				
				0.1469	0.8848	0.066	No
Contr.	10	30.30	1.3374				Effect

df=18

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.4 shows that on pretest, male students taught by flipped teaching method secured mean scores 30.20 whereas male students taught by traditional teaching method secured mean scores 30.30. The standard deviation of male students taught through flipped teaching was 1.6865 while standard deviation of male students taught through traditional method was 1.3374. As t value calculated (0.1469) was lower than t value tabulated (2.10) at 0.05. And p value was found to be 0.8848. Cohen's d value was 0.066. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.5

On first level of Revised Bloom's Taxonomy "Remember Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	10.80	3.1482				
				0.1208	0.9043	0.031	No
Contr.	30	10.90	3.2654				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.5 shows that on pretest, male students taught by flipped teaching method secured mean scores 10.80 whereas male students taught by traditional teaching method secured mean scores 10.90. The standard deviation of male students taught through flipped teaching was 3.1482 while standard deviation of male students taught through traditional method was 3.2654. As t value calculated (0.1208) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9043. Hence there was no difference found in academic achievement scores of male students taught through traditional method and flipped teaching method. Cohen's d value was 0.031. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.6

On second level of Revised Bloom's Taxonomy "Understand Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	9.80	3.6962				
				0.2135	0.9148	0.055	No
Contr.	30	9.60	3.5594				Effect
df=58							

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.6 shows that on pretest, male students taught by flipped teaching method secured mean scores 9.80 whereas male students taught by traditional teaching method secured mean scores 9.60. The standard deviation of male students taught through flipped teaching was 3.6962 while standard deviation of male students taught through traditional method was 3.5594. As t value calculated (0.2135) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9148. Cohen's d value was 0.055. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.7

On third level of Revised Bloom's Taxonomy "Apply Level Questions", Comparison of Effect of Flipped Teaching Group and Traditional Teaching Group on Academic Achievement of Male Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	8.60	2.1274				
				0.1738	0.8626	0.045	No
Contr.	30	8.70	2.3245				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.7 shows that on pretest, male students taught by flipped teaching method secured mean scores 8.60 whereas male students taught by traditional teaching method secured mean scores 8.70. The standard deviation of male students taught through flipped teaching was 2.1274 while standard deviation of male students taught through traditional method was 2.3245. As t value calculated (0.1738) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.8626. Cohen's d value was 0.045. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.8

On fourth level of Revised Bloom's Taxonomy "Analyze Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	6.50	2.4614				
				0.1608	0.8725	0.042	No
Contr.	30	6.60	2.3437				Effect
df=58							

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.8 shows that on pretest, male students taught by flipped teaching method secured mean scores 6.50 whereas male students taught by traditional teaching method secured mean scores 6.60. The standard deviation of male students taught through flipped teaching was 2.4714 while standard deviation of male students taught through traditional method was 2.3437. As t value calculated (0.1612) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.8725. Hence there was no difference found in academic achievement scores of male students taught through traditional method and flipped teaching method. Cohen's d value was 0.042. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.9

On fifth level of Revised Bloom's Taxonomy "Evaluation Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	3.00	1.5176				
				0.2619	0.7943	0.068	No
Contr.	30	2.90	1.4391				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.9 shows that on pretest, male students taught by flipped teaching method secured mean scores 3.00 whereas male students taught by traditional teaching method secured mean scores 2.90. The standard deviation of male students taught through flipped teaching was 1.5176 while standard deviation of male students taught through traditional method was 1.4391. As t value calculated (0.2619) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.7943. Cohen's d value was 0.068. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.10

On the sixth i.e. the highest level of Revised Bloom's Taxonomy "Create Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	1.20	1.0986				
				0.3523	0.7259	0.091	No
Contr.	30	1.30	1.1001				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.10 shows that on pretest, male students taught by flipped teaching method secured mean scores 1.20 whereas male students taught by traditional teaching method secured mean scores 1.30. The standard deviation of male students taught through flipped teaching was 1.0986 while standard deviation of male students taught through traditional method was 1.1001. As t value calculated (0.3523) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.7809. Cohen's d value was 0.091. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Analysis of Data of Male Students on Posttest

Table 4.11

Comparison of Mean Scores and Effect Size of Flipped Teaching and Traditional Teaching on Male Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	61.20	12.4938				
				2.8418	0.006181	0.73	Large
Contr.	30	52.63	10.7942				Effect
df=58							

Hypothesis 1a:

H₀1a: On posttest achievement scores, no difference will be found in male students taught through Traditional Teaching Method and Flipped Teaching Method.

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00.

Table 4.11 shows that on posttest, male students of flipped teaching secured mean scores 61.20 whereas male students of traditional teaching method secured mean scores 52.63. The standard deviation of male students taught through flipped teaching was 12.4938 while standard deviation of male students taught through traditional method was 10.7942. As t value calculated (2.8418) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.006181. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀1a: On posttest achievement scores, no difference will be found in male students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 0.73. On posttest, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.12

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of High Achiever Male Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	75.50	4.6963				
				5.717	0.00002022	2.56	Large
Contr.	10	64.90	3.5103				Effect

df=18

Hypothesis 2a:

H₀2a: On posttest achievement scores, no difference will be found in male high achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.12 shows that on posttest, male high achiever students of flipped teaching secured mean scores 75.50 whereas male high achiever students of traditional teaching method secured mean scores 64.90. The standard deviation of male high achiever students taught through flipped teaching was 4.6963 while standard deviation of male high achiever students taught through traditional method was 3.5103. As t value calculated (5.717) was higher than t value tabulated (2.10) at 0.05. And p value was found to be 0.00002022. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀2a: On posttest achievement scores, no difference will be found in male high achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 2.56. On posttest, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.13

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Average Achiever Male Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	61.00	1.9999				
				9.9116	<0.00001	4.43	Large
Contr.	10	52.80	1.6865				Effect

df=18

Hypothesis 3a

H₀3a: On posttest achievement scores, no difference will be found in male average achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.13 shows that on posttest, male average achiever students of flipped teaching secured mean scores 61.00 whereas male average achiever students of traditional teaching method secured mean scores 52.80. The standard deviation of male average achiever students taught through flipped teaching was 1.9999 while standard deviation of male average achiever students taught through traditional method was 1.6865. As t value calculated (9.9116) was higher than t value tabulated (2.10) at 0.05. And p value was found to be <0.00001. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀3a: On posttest achievement scores, no difference will be found in male average achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 4.43. On posttest, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.14

Comparison of Mean Scores and Effect Size of Flipped Teaching and Traditional Teaching of Low Achiever Male Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	47.10	5.3634				
				3.0841	0.006398	1.38	Large
Contr.	10	40.20	4.6139				Effect

df=18

Hypothesis 4a

H₀4a: On posttest achievement scores, no difference will be found in male low achiever students taught through Traditional Teaching Method and Flipped Teaching Method

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.14 shows that on posttest, male low achiever students of flipped teaching secured mean scores 47.10 whereas male low achiever students of traditional teaching method secured mean scores 40.20. The standard deviation of male low achiever students taught through flipped teaching was 5.3634 while standard deviation of male low achiever students taught through traditional method was 4.6139. As t value calculated (3.0841) was higher than t value tabulated (2.10) at 0.05. And p value was found to be 0.006398. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀4a: On posttest achievement scores, no difference will be found in male low achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 1.38. On posttest, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.15

On first level of Revised Bloom's Taxonomy "Remember Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	17.20	3.8476				
				0.2026	0.8402	0.052	No
Contr.	30	17.00	3.7993				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.15 shows that on posttest, male students taught by flipped teaching method secured mean scores 17.90 whereas male students taught by traditional teaching method secured mean scores 17.70. The standard deviation of male students taught through flipped teaching was 3.8476 while standard deviation of male students taught through traditional method was 3.7993. As t value calculated (0.2026) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.8402. Hence, there was no clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.052. On posttest, it manifested no effect of flipped teaching on academic performance of male students. Both groups were equal in academic achievement at posttest.

Table 4.16

On second level of Revised Bloom's Taxonomy "Understand Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	14.40	3.4327				
				2.3571	0.02181	0.61	Medium
Contr.	30	12.20	3.7882				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.16 shows that on posttest, male students of flipped teaching secured mean scores 14.40 whereas male students of traditional teaching method secured mean scores 12.20. The standard deviation of male students taught through flipped teaching was 3.4327 while standard deviation of male students taught through traditional method was 3.7882. As t value calculated (2.3571) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.02181. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.61. On posttest, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.17

On third level of Revised Bloom's Taxonomy "Apply Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	10.80	2.0003				
				2.7024	0.009013	0.70	Large
Contr.	30	9.40	2.0125				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.17 shows that on posttest, male students of flipped teaching secured mean scores 10.80 whereas male students of traditional teaching method secured mean scores 9.40. The standard deviation of male students taught through flipped teaching was 2.0003 while standard deviation of male students taught through traditional method was 2.0125. As t value calculated (2.7024) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.0039013. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.70. On posttest, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.18

On fourth level of Revised Bloom's Taxonomy "Analyze Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	9.40	2.6237				
				3.0403	0.003543	0.79	Large
Contr.	30	7.50	2.1983				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.18 shows that on posttest, male students of flipped teaching secured mean scores 9.40 whereas male students of traditional teaching method secured mean scores 7.50. The standard deviation of male students taught through flipped teaching was 2.6237 while standard deviation of male students taught through traditional method was 2.1983. As t value calculated (3.0403) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.003543. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.79. On posttest, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.19

On fifth level of Revised Bloom's Taxonomy "Evaluation Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Protttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	5.20	2.4816				
				3.1431	0.002634	0.81	Large
Contr.	30	3.40	1.9185				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.19 shows that on posttest, male students of flipped teaching secured mean scores 5.20 whereas male students of traditional teaching method secured mean scores 3.40. The standard deviation of male students taught through flipped teaching was 2.4816 while standard deviation of male students taught through traditional method was 2.9185. As t value calculated (3.1431) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.002634. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.81. On posttest, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.20

On the sixth i.e. the highest level of Revised Bloom's Taxonomy "Create Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	4.20	1.3049				
				3.2742	0.001789	0.85	Large
Contr.	30	3.10	1.2974				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.20 shows that on posttest, male students of flipped teaching secured mean scores 4.20 whereas male students of traditional teaching method secured mean scores 3.10. The standard deviation of male students taught through flipped teaching was 1.3049 while standard deviation of male students taught through traditional method was 1.2974. As t value calculated (3.2742) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.001789. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.85. On posttest, it indicated that there was effect of flipped teaching on academic achievement of male students.

Analysis of Data of Male Students on Retention Test

Table 4.21

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	51.66	12.7531				
				3.2125	0.002149	0.83	Large
Contr.	30	42.33	9.5170				Effect

df=58

Hypothesis 5a

H₀5a: On retention test achievement scores, no difference will be found in male students taught through Traditional Teaching Method and Flipped Teaching Method.

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.21 shows that on retention test, male students of flipped teaching secured mean scores 51.66 whereas male students of traditional teaching method secured mean scores 42.33. The standard deviation of male students taught through flipped teaching was 12.7531 while standard deviation of male students taught through traditional method was 9.5170. As t value calculated (3.2125) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.002149. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀5a: On retention test achievement scores, no difference will be found in male students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 0.83. On retention test, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.22

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of High Achiever Male Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	66.40	6.9633				
				5.2508	0.00005412	2.35	Large
Contr.	10	53.70	3.1640				Effect

df=18

Hypothesis 6a

H₀6a: On retention test achievement scores, no difference will be found in male high achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.22 shows that on retention test, male high achiever students of flipped teaching secured mean scores 66.40 whereas male high achiever students of traditional teaching method secured mean scores 53.70. The standard deviation of male high achiever students taught through flipped teaching was 6.9633 while standard deviation of male high achiever students taught through traditional method was 3.1640. As t value calculated (5.2508) was higher than t value tabulated (2.10) at 0.05. And p value was found to be 0.00005412. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀6a: On retention test achievement scores, no difference will be found in male high achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 2.35. On retention test, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.23

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Average Achiever Male Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	51.20	1.5491				
				9.1164	<0.00001	4.08	Large
Contr.	10	41.40	3.0258				Effect

df=18

Hypothesis 7a:

H₀7a: On retention test achievement scores, no difference will be found in male average achiever students taught through Traditional Teaching Method and Flipped Teaching Method

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.23 shows that on retention test, average achiever male students of flipped teaching secured mean scores 51.20 whereas average achiever male students of traditional teaching method secured mean scores 41.40. The standard deviation of average achiever male students taught through flipped teaching was 1.5491 while standard deviation of average achiever male students taught through traditional method was 3.0258. As t value calculated (9.1166) was higher than t value tabulated (2.10) at 0.05. And p value was found to be <.00001. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀7a: On retention test achievement scores, no difference will be found in male average achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 4.08. On retention test, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.24

Comparison of Mean Scores and Effect Size of Flipped Teaching and Traditional Teaching of Low Achiever Male Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	37.40	2.3664				
				4.8593	0.000126	2.17	Large
Contr.	10	31.90	2.6853				Effect

df=18

Hypothesis 8a

H₀8a: On retention test achievement scores, no difference will be found in male low achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.24 shows that on retention test, male low achiever students of flipped teaching secured mean scores 37.40 whereas male low achiever students of traditional teaching method secured mean scores 31.90. The standard deviation of male low achiever students taught through flipped teaching was 2.3664 while standard deviation of male low achiever students taught through traditional method was 2.6853. As t value calculated (4.8593) was higher than t value tabulated (2.10) at 0.05. And p value was found to be 0.000126. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀8a: On retention test achievement scores, no difference will be found in male low achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 2.17. On retention test, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.25

On first level of Revised Bloom's Taxonomy "Remember Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	14.50	3.8847				
				0.3113	0.7567	0.08	No
Contr.	30	14.20	3.5729				Effect
df=58							

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.25 shows that on retention test, male students taught by flipped teaching method secured mean scores 14.50 whereas male students taught by traditional teaching method secured mean scores 14.20. The standard deviation of male students taught through flipped teaching was 3.8847 while standard deviation of male students taught through traditional method was 3.5729. As t value calculated (0.3113) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.7567. Hence there was no difference found in academic achievement scores of male students taught through traditional method and flipped teaching method. Hence, there was no clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.08. On retention test, it manifested no effect of flipped teaching on academic performance of male students. Both groups were equal in academic achievement at retention test.

Table 4.26

On second level of Revised Bloom's Taxonomy "Understand Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	11.90	2.9316				
				1.9266	0.03799	0.55	Medium
Contr.	30	10.30	2.9047				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.26 shows that on retention test, male students of flipped teaching secured mean scores 11.90 whereas male students of traditional teaching method secured mean scores 10.30. The standard deviation of male students taught through flipped teaching was 2.9316 while standard deviation of male students taught through traditional method was 2.9047. As t value calculated (2.1235) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.03799. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.55. On retention test, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.27

On third level of Revised Bloom's Taxonomy "Apply Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	9.90	2.1692	2.8125	0.006697	0.73	Large Effect
Contr.	30	8.10	2.7536				

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.27 shows that on retention test, male students of flipped teaching secured mean scores 9.90 whereas male students of traditional teaching method secured mean scores 8.10. The standard deviation of male students taught through flipped teaching was 2.1692 while standard deviation of male students taught through traditional method was 2.7536. As t value calculated (2.8125) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.006697. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.73. On retention test, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.28

On fourth level of Revised Bloom's Taxonomy "Analyze Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	8.10	2.9746				
				3.1394	0.002663	0.81	Large
Contr.	30	5.80	2.6934				Effect
df=58							

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.28 shows that on retention test, male students of flipped teaching secured mean scores 8.10 whereas male students of traditional teaching method secured mean scores 5.80. The standard deviation of male students taught through flipped teaching was 2.9746 while standard deviation of male students taught through traditional method was 2.6934. As t value calculated (3.1394) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.002663. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.81. On retention test, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.29

On fifth level of Revised Bloom's Taxonomy "Evaluation Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Male Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	4.10	2.5133				
				3.2525	0.001909	0.84	Large
Contr.	30	2.50	0.9712				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.29 shows that on retention test, male students of flipped teaching secured mean scores 4.10 whereas male students of traditional teaching method secured mean scores 2.50. The standard deviation of male students taught through flipped teaching was 2.5133 while standard deviation of male students taught through traditional method was 0.9712. As t value calculated (3.2525) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.001909. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.84. On retention test, it manifested the effect of flipped teaching on academic performance of male students.

Table 4.30

On the sixth i.e. the highest level of Revised Bloom's Taxonomy "Create Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group Male Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	3.20	2.6464				
				3.4912	0.0009263	0.90	Large
Contr.	30	1.40	0.9856				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.30 shows that on retention test, male students of flipped teaching secured mean scores 3.20 whereas male students of traditional teaching method secured mean scores 1.40. The standard deviation of male students taught through flipped teaching was 2.6464 while standard deviation of male students taught through traditional method was 0.9856. As t value calculated (3.4912) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.0009263. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.90. On retention test, it manifested the effect of flipped teaching on academic performance of male students.

4.2.1 Analysis of Data of Female Students

Analysis of Data of Female Students on Pre-Test

Table 4.31

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	44.53	8.5070				
				0.01514	0.9880	0.0039	No
Contr.	30	44.50	8.4964				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.31 shows that on pretest, female students of flipped teaching method secured mean scores 44.53 whereas female students of traditional teaching method secured mean scores 44.50. The standard deviation of female students taught through flipped teaching was 8.508 while standard deviation of female students taught through traditional method was 8.576. As t value calculated (0.01514) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9880. Cohen's d value was 0.0039. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.32

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of High Achiever Female Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	54.70	3.1989				
				0.06734	0.9471	0.03	No
Contr.	10	54.60	3.4383				Effect
df=18							

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.32 shows that on pretest, female students of flipped teaching method secured mean scores 54.70 whereas female students of traditional teaching method secured mean scores 54.60. The standard deviation of female students taught through flipped teaching was 3.1989 while standard deviation of female students taught through traditional method was 3.4383. As t value calculated (0.06734) was lower than t value tabulated (2.10) at 0.05. And p value was found to be 0.9471. Cohen's d value was 0.03. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.33

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Average Achiever Female Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	43.60	3.2386				
				0.07173	0.9436	0.032	No
Contr.	10	43.50	2.9907				Effect

df=18

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.33 shows that on pretest, female students of flipped teaching method secured mean scores 43.60 whereas female students of traditional teaching method secured mean scores 43.50. The standard deviation of female students taught through flipped teaching was 2.2386 while standard deviation of female students taught through traditional method was 2.9907. As t value calculated (0.07173) was lower than t value tabulated (2.10) at 0.05. And p value was found to be 0.9436. Cohen's d value was 0.032. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.34

Comparison of Mean Scores and Effect Size of Flipped Teaching and Traditional Teaching of Low Achiever Female Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	35.30	2.1628				
				0.09972	0.9217	0.045	No
Contr.	10	35.40	2.3190				Effect
df=18							

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.34 shows that on pretest, female students of flipped teaching method secured mean scores 35.30 whereas female students of traditional teaching method secured mean scores 35.40. The standard deviation of female students taught through flipped teaching was 2.1628 while standard deviation of female students taught through traditional method was 2.3190. As t value calculated (0.09972) was lower than t value tabulated (2.10) at 0.05. And p value was found to be 0.9217. Cohen's d value was 0.045. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.35

On first level of Revised Bloom's Taxonomy "Remember Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	12.40	3.7528				
				0.1043	0.9173	0.027	No
Contr.	30	12.50	3.6736				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.35 shows that on pretest, female students of flipped teaching method secured mean scores 12.40 whereas female students of traditional teaching method secured mean scores 12.50. The standard deviation of female students taught through flipped teaching was 3.7528 while standard deviation of female students taught through traditional method was 3.6736. As t value calculated (0.1043) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9173. Cohen's d value was 0.027. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.36

On second level of Revised Bloom's Taxonomy "Understand Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	10.50	3.5373				
				0.1125	0.9108	0.029	No
Contr.	30	10.40	3.3456				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.36 shows that on pretest, female students of flipped teaching method secured mean scores 10.50 whereas female students of traditional teaching method secured mean scores 10.40. The standard deviation of female students taught through flipped teaching was 3.5373 while standard deviation of female students taught through traditional method was 3.3456. As t value calculated (0.1125) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9108. Cohen's d value was 0.029. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.37

On third level of Revised Bloom's Taxonomy "Apply Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	9.50	3.2502	0.1193	0.9054	0.031	No
Contr.	30	9.40	3.2418				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.37 shows that on pretest, female students of flipped teaching method secured mean scores 8.40 whereas female students of traditional teaching method secured mean scores 8.30. The standard deviation of female students taught through flipped teaching was 3.2502 while standard deviation of female students taught through traditional method was 3.2418. As t value calculated (0.1193) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9054. Cohen's d value was 0.031. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.38

On fourth level of Revised Bloom's Taxonomy "Analyze Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	7.50	2.7316				
				0.1411	0.8883	0.036	No
Contr.	30	7.40	2.7582				Effect
df=58							

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.38 shows that on pretest, female students of flipped teaching method secured mean scores 7.50 whereas female students of traditional teaching method secured mean scores 7.40. The standard deviation of female students taught through flipped teaching was 2.7316 while standard deviation of female students taught through traditional method was 2.7582. As t value calculated (0.14101) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.8883. Cohen's d value was 0.036. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.39

On fifth level of Revised Bloom's Taxonomy "Evaluation Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	3.40	1.9136				
				0.2026	0.8401	0.052	No
Contr.	30	3.50	1.9095				Effect
df=58							

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.39 shows that on pretest, female students of flipped teaching method secured mean scores 3.40 whereas female students of traditional teaching method secured mean scores 3.50. The standard deviation of female students taught through flipped teaching was 1.9136 while standard deviation of female students taught through traditional method was 1.9095. As t value calculated (0.2026) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.8401. Cohen's d value was 0.052. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Table 4.40

On the sixth i.e. the highest level of Revised Bloom's Taxonomy "Create Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Pretest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	2.20	0.7667				
				0.5045	0.6158	0.13	No
Contr.	30	2.30	0.7686				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.40 shows that on pretest, female students of flipped teaching method secured mean scores 2.20 whereas female students of traditional teaching method secured mean scores 2.30. The standard deviation of female students taught through flipped teaching was 0.7667 while standard deviation of female students taught through traditional method was 0.7686. As t value calculated (0.5045) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.6158. Cohen's d value was 0.13. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest.

Analysis of Data of Female Students on Post-Test

Table 4.41

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	68.16	10.8820	4.0284	0.0001654	1.04	Large Effect
Contr.	30	57.50	9.5871				

df=58

Hypothesis1b

H₀1b: On posttest achievement scores, no difference will be found in female students taught through Traditional Teaching Method and Flipped Teaching Method

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.41 shows that on posttest, female students of flipped teaching secured mean scores 68.16 whereas female students of traditional teaching method secured mean scores 57.50. The standard deviation of female students taught through flipped teaching was 10.8820 while standard deviation of female students taught through traditional method was 9.5871. As t value calculated (4.0284) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.0001654. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀1b: On posttest achievement scores, no difference will be found in female students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 1.04. On posttest, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.42

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of High Achiever Female Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	81.20	2.8982	8.5173	<.00001	3.81	Large Effect
Contr.	10	68.50	3.7193				

df=18

Hypothesis 2b

H₀2b: On posttest achievement scores, no difference will be found in female high achiever students taught through Traditional Teaching Method and Flipped Teaching Method.

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.42 shows that on posttest, female high achiever students of flipped teaching secured mean scores 81.20 whereas female high achiever students of traditional teaching method secured mean scores 68.50. The standard deviation of female high achiever students taught through flipped teaching was 2.8982 while standard deviation of female high achiever students taught through traditional method was 3.7193. As t value calculated (8.5173) was higher than t value tabulated (2.10) at 0.05. And p value was found to be <.00001. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀2b: On posttest achievement scores, no difference will be found in female high achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 3.81. On posttest, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.43

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Average Achiever Female Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	67.30	3.1989				
				7.7929	<.00001	3.49	Large
Contr.	10	57.30	2.4966				Effect

df=18

Hypothesis 3b

H₀3b: On posttest achievement scores, no difference will be found in female average achiever students taught through Traditional Teaching Method and Flipped Teaching Method

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.43 shows that on posttest, female average achiever students of flipped teaching secured mean scores 67.30 whereas female average achiever students of traditional teaching method secured mean scores 57.30. The standard deviation of female average achiever students taught through flipped teaching was 3.1989 while standard deviation of female average achiever students taught through traditional method was 2.4966. As t value calculated (7.7929) was higher than t value tabulated (2.10) at 0.05. And p value was found to be <.00001. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀3b: On posttest achievement scores, no difference will be found in female average achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 3.49. On posttest, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.44

Comparison of Mean Scores and Effect Size of Flipped Teaching and Traditional Teaching of Low Achiever Female Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	56.00	2.9814				
				6.4329	0.000004701	2.88	Large Effect
Contr.	10	46.70	3.4657				

df=18

Hypothesis 4b

H₀4b: On posttest achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.44 shows that on posttest, female low achiever students of flipped teaching secured mean scores 56.00 whereas female low achiever students of traditional teaching method secured mean scores 46.70. The standard deviation of female low achiever students taught through flipped teaching was 2.9814 while standard deviation of female low achiever students taught through traditional method was 3.4657. As t value calculated (6.4329) was higher than t value tabulated (2.10) at 0.05. And p value was found to be 0.000004701. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀4b: On posttest achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 2.88. On retention test, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.45

On first level of Revised Bloom's Taxonomy "Remember Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	17.90	3.6881				
				0.2059	0.8376	0.053	No
Contr.	30	17.70	3.8352				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.45 shows that on posttest, female students taught by flipped teaching method secured mean scores 17.90 whereas female students taught by traditional teaching method secured mean scores 17.70. The standard deviation of female students taught through flipped teaching was 3.6881 while standard deviation of female students taught through traditional method was 3.8352. As t value calculated (0.2059) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.8376. Hence, there was no clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.053. On posttest, it manifested no effect of flipped teaching on academic performance of female students. Both groups were equal in academic achievement at posttest.

Table 4.46

On second level of Revised Bloom's Taxonomy "Understand Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	15.30	3.1036				
				2.7309	0.008352	0.71	Large
Contr.	30	13.10	3.1364				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.46 shows that on posttest, female students taught by flipped teaching method secured mean scores 15.30 whereas female students taught by traditional teaching method secured mean scores 13.10. The standard deviation of female students taught through flipped teaching was 3.1036 while standard deviation of female students taught through traditional method was 3.1364. As t value calculated (2.7309) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.008352. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.71. On posttest, it manifested effect of flipped teaching on academic performance of female students.

Table 4.47

On third level of Revised Bloom's Taxonomy "Apply Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	11.80	2.2432				
				2.8169	0.006618	0.73	Large
Contr.	30	10.20	2.1557				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.47 shows that on posttest, female students of flipped teaching secured mean scores 11.80 whereas female students of traditional teaching method secured mean scores 10.20. The standard deviation of female students taught through flipped teaching was 2.2432 while standard deviation of male students taught through traditional method was 2.1557. As t value calculated (2.8169) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.006618. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.81. On posttest, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.48

On fourth level of Revised Bloom's Taxonomy "Analyze Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	10.80	2.9882				
				3.3063	0.001626	0.85	Large
Contr.	30	8.30	2.8676				Effect
df=58							

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.48 shows that on posttest, female students of flipped teaching secured mean scores 10.80 whereas female students of traditional teaching method secured mean scores 8.30. The standard deviation of female students taught through flipped teaching was 2.9882 while standard deviation of male students taught through traditional method was 2.8676. As t value calculated (3.3063) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.001626. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.85. On posttest, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.49

On fifth level of Revised Bloom's Taxonomy "Evaluation Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	6.70	2.6583				
				3.4725	0.0009813	0.90	Large
Contr.	30	4.50	2.2305				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.49 shows that on posttest, female students of flipped teaching secured mean scores 6.70 whereas female students of traditional teaching method secured mean scores 4.50. The standard deviation of female students taught through flipped teaching was 2.6583 while standard deviation of male students taught through traditional method was 2.2305. As t value calculated (3.4725) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.0006059. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.90. On posttest, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.50

On the sixth i.e. the highest level of Revised Bloom's Taxonomy "Create Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Posttest

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	5.80	2.7456				
				3.6641	0.0005393	95	Large
Contr.	30	3.70	1.5218				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.50 shows that on posttest, female students of flipped teaching secured mean scores 5.80 whereas female students of traditional teaching method secured mean scores 3.70. The standard deviation of female students taught through flipped teaching was 2.7456 while standard deviation of male students taught through traditional method was 1.5218. As t value calculated (3.6641) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.0005393. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 95. On posttest, it manifested the effect of flipped teaching on academic performance of female students.

Analysis of Data of Female Students on Retention Test

Table 4.51

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	61.23	11.2454				
				4.9494	0.00006747	1.28	Large
Contr.	30	48.13	9.1490				Effect

df=58

Hypothesis 5b

H₀5b: On retention test achievement scores, no difference will be found in female students taught through Traditional Teaching Method and Flipped Teaching Method

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.51 shows that on retention test, female students of flipped teaching secured mean scores 61.23 whereas female students of traditional teaching method secured mean scores 48.13. The standard deviation of female students taught through flipped teaching was 11.2454 while standard deviation of female students taught through traditional method was 9.1490. As t value calculated (4.9494) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.00006747. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀5b: On retention test achievement scores, no difference will be found in female students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 1.28. On retention test, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.52

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of High Achiever Female Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	74.60	3.5652				
				9.3584	<0.00001	4.19	Large
Contr.	10	58.90	3.9285				Effect

df=18

Hypothesis 6b

H₀6b: On retention test achievement scores, no difference will be found in female high achiever students taught through Traditional Teaching Method and Flipped Teaching Method

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.52 shows that on retention test, female high achiever students of flipped teaching secured mean scores 74.60 whereas female high achiever students of traditional teaching method secured mean scores 58.90. The standard deviation of female high achiever students taught through flipped teaching was 3.5652 while standard deviation of female high achiever students taught through traditional method was 3.9285. As t value calculated (9.3584) was higher than t value tabulated (2.10) at 0.05. And p value was found to be <0.00001. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀6b: On retention test achievement scores, no difference will be found in female high achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 4.19. On retention test, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.53

Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Average Achiever Female Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	60.20	3.8311				
				7.6242	<.00001	3.41	Large
Contr.	10	47.20	3.8528				Effect

df=18

Hypothesis 7b

H₀7b: On retention test achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.53 shows that on retention test, female average achiever students of flipped teaching secured mean scores 60.20 whereas female average achiever students of traditional teaching method secured mean scores 47.20. The standard deviation of female average achiever students taught through flipped teaching was 3.8311 while standard deviation of female average achiever students taught through traditional method was 3.8528. As t value calculated (7.6242) was higher than t value tabulated (2.10) at 0.05. And p value was found to be <.00001. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀7b: On retention test achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 3.41. On retention test, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.54

Comparison of Mean Scores and Effect Size of Flipped Teaching and Traditional Teaching of Low Achiever Female Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	10	48.80	2.9739				
				9.9762	<.00001	4.46	Large
Contr.	10	38.30	1.4944				Effect

df=18

Hypothesis 8b

H₀8b: On retention test achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method

DECISION RULE (t test) statistically difference between means when df=18 and if t at 0.05 level of significance > 2.10

Table 4.54 shows that on retention test, female low achiever students of flipped teaching secured mean scores 48.80 whereas female low achiever students of traditional teaching method secured mean scores 38.30. The standard deviation of female low achiever students taught through flipped teaching was 2.9739 while standard deviation of female low achiever students taught through traditional method was 1.4944. As t value calculated (9.9762) was higher than t value tabulated (2.10) at 0.05. And p value was found to be <0.00001. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀8b: On retention test achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 4.46. On retention test, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.55

On first level of Revised Bloom's Taxonomy "Remember Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	17.10	4.6276				
				0.5904	0.5572	0.15	No
Contr.	30	16.40	4.5568				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.55 shows that on retention test, female students taught by flipped teaching method secured mean scores 17.10 whereas female students taught by traditional teaching method secured mean scores 16.40. The standard deviation of female students taught through flipped teaching was 4.6276 while standard deviation of female students taught through traditional method was 4.5568. As t value calculated (0.5904) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.5572. Hence, there was no clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.15. On retention test, it manifested no effect of flipped teaching on academic performance of female students. Both groups were equal in academic achievement at retention test.

Table 4.56

On second level of Revised Bloom's Taxonomy "Understand Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	14.20	2.8273	2.7215	0.08565	0.70	Large Effect
Contr.	30	12.30	2.5745				

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.56 shows that on retention test, female students taught by flipped teaching method secured mean scores 14.20 whereas female students taught by traditional teaching method secured mean scores 12.30. The standard deviation of female students taught through flipped teaching was 2.8273 while standard deviation of female students taught through traditional method was 2.7545. As t value calculated (2.7215) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.08565. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.70. On retention test, it manifested effect of flipped teaching on academic performance of female students.

Table 4.57

On third level of Revised Bloom's Taxonomy "Apply Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	10.80	3.4794				
				3.2164	0.002124	0.83	Large
Contr.	30	8.70	2.7381				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.57 shows that on retention test, female students of flipped teaching secured mean scores 10.80 whereas female students of traditional teaching method secured mean scores 8.20. The standard deviation of female students taught through flipped teaching was 3.4794 while standard deviation of male students taught through traditional method was 2.7381. As t value calculated (3.22164) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.002124. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.83. On retention test, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.58

On fourth level of Revised Bloom's Taxonomy "Analyze Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	8.50	3.1758				
				3.4192	0.001155	0.88	Large
Contr.	30	5.90	2.6947				Effect
df=58							

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.58 shows that on retention test, female students of flipped teaching secured mean scores 8.50 whereas female students of traditional teaching method secured mean scores 5.90. The standard deviation of female students taught through flipped teaching was 3.1758 while standard deviation of male students taught through traditional method was 2.6947. As t value calculated (3.4192) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.001155. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.88. On retention test, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.59

On fifth level of Revised Bloom's Taxonomy "Evaluation Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group of Female Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	6.10	3.9837				
				3.5672	0.007315	0.92	Large
Contr.	30	2.90	2.8761				Effect
df=58							

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.59 shows that on retention test, female students of flipped teaching secured mean scores 5.10 whereas female students of traditional teaching method secured mean scores 2.90. The standard deviation of female students taught through flipped teaching was 3.9837 while standard deviation of male students taught through traditional method was 2.8761. As t value calculated (3.5672) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.007315. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.92. On retention test, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.60

On the sixth i.e. the highest level of Revised Bloom's Taxonomy "Create Level Questions", Comparison of Mean Scores and Effect Size of Flipped Teaching Group and Traditional Teaching Group Female Students on Retention Test

Group	N	Mean	SD	t value	p	Cohen's d	Effect Size
Exp.	30	4.50	3.3466				
				3.7363	0.0004286	0.96	Large
Contr.	30	1.90	1.8242				Effect

df=58

DECISION RULE (t test) statistically difference between means when df=58 and if t at 0.05 level of significance > 2.00

Table 4.60 shows that on retention test, female students of flipped teaching secured mean scores 4.50 whereas female students of traditional teaching method secured mean scores 1.90. The standard deviation of female students taught through flipped teaching was 3.3466 while standard deviation of male students taught through traditional method was 1.225. As t value calculated (3.7363) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.0004286. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.96. On retention test, it manifested the effect of flipped teaching on academic performance of female students.

Table 4.61

Procedure of Testing Hypotheses: Summary of Hypotheses as Rejected or Accepted

Sr. No.	Hypothesis	Status	Data Analysis Technique
1	H01a: On posttest achievement scores, no difference will be found in male students taught through Traditional Teaching Method and Flipped Teaching Method.	It was rejected	t test (Independent) and Cohen's d
2	H01b: On posttest achievement scores, no difference will be found in female students taught through Traditional Teaching Method and Flipped Teaching Method.	It was rejected	Same as above
3	H02a: On posttest achievement scores, no difference will be found in male high achiever students taught through Traditional Teaching Method and Flipped Teaching Method.	It was rejected	Same as above
4	H02b: On posttest achievement scores, no difference will be found in male high achiever students taught through Traditional Teaching Method and Flipped Teaching Method.	It was rejected	Same as above
5	H03a: On posttest achievement scores, no difference will be found in male average achiever students taught through Traditional	It was rejected	Same as above

Teaching Method and Flipped Teaching Method.

- | | | | |
|----|---|-----------------|---------------|
| 6 | H03b: On posttest achievement scores, no difference will be found in female average achiever students taught through Traditional Teaching Method and Flipped Teaching Method. | It was rejected | Same as above |
| 7 | H04a: On posttest achievement scores, no difference will be found in male low achiever students taught through Traditional Teaching Method and Flipped Teaching Method. | It was rejected | Same as above |
| 8 | H04b: On posttest achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method. | It was rejected | Same as above |
| 9 | H05a: On retention test achievement scores, no difference will be found in male students taught through Traditional Teaching Method and Flipped Teaching Method. | It was rejected | Same as above |
| 10 | H05b: On retention test achievement scores, no difference will be found in female students taught through Traditional Teaching Method and Flipped Teaching Method. | It was rejected | Same as above |
| 11 | H06a: On retention test achievement scores, no difference will be found in male high achiever | It was rejected | Same as above |

students taught through Traditional Teaching Method and Flipped Teaching Method.

- | | | | |
|----|---|-----------------|---------------|
| 12 | H06b: On retention test achievement scores, no difference will be found in female high achiever students taught through Traditional Teaching Method and Flipped Teaching Method. | It was rejected | Same as above |
| 13 | H07a: On retention test achievement scores, no difference will be found in male average achiever students taught through Traditional Teaching Method and Flipped Teaching Method. | It was rejected | Same as above |
| 14 | H07b: On retention test achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method. | It was rejected | Same as above |
| 15 | H08a: On retention test achievement scores, no difference will be found in male low achiever students taught through Traditional Teaching Method and Flipped Teaching Method. | It was rejected | Same as above |
| 16 | H08b: On retention test achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method. | It was rejected | Same as above |

CHAPTER 5

SUMMARY, FINDINGS, DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

The primary target of this study was to examine the effect of flipped teaching on the academic performance of 9th grade students in English. The study was based on the following objectives: 1) to find out the effect of flipped teaching on the academic performance of secondary level male and female students, 2) to examine the effect of flipped teaching on the academic achievement of secondary level high achiever, average achiever and low achiever male and female students 3) to investigate the effect of flipped teaching on the academic achievement of male and female students in perspective of test items based on Bloom Taxonomy. 4) to find out the effect of flipped teaching on the retention of secondary level male and female students, 5) to examine effect of flipped teaching on retention of secondary level male and female high achiever, average achiever and low achiever students, 6) to investigate the effect of flipped teaching on retention of secondary level male and female students in perspective of test items based on Bloom Taxonomy. Experimental study was conducted. Two parallel experiments for male and female students were arranged. Duration of experiment was eight weeks. Pre-test, post-test and retention test were used as research tools. The researcher compared the performance of secondary level students in the subject of English taught by flipped teaching approach and traditional teaching approach. This study was an experimental study in nature and research design used for experimental research was pretest posttest equivalent group design. A philosophical base and foundation on which any research is based is called research paradigm. This research was experimental. Pragmatism philosophical thought is research paradigm of this research. The ontology, axiology and epistemology of pragmatism is based on experiment. Key element of Pragmatism is to find the truth, reality, value and worth of knowledge through experiment. All 62 male and 72 female students studying in 9th class at Unique Public Secondary School Kallar Kahar comprised the population of the study. Target population of study was sixty female and sixty male students of 9th class which were selected for experiment in selected school. Sixty male and sixty female

students were randomly selected for the experiment. Pre-test was administered. Students were categorized as student number from 1 to 60 on the basis of pre-test marks (from the highest to the lowest 1 to 60). On the basis of these pre-test marks, students were divided into control group and experimental group by paired random sampling. Marks was the criteria of matching. Top 10 were taken as high achievers, medium 10 were taken as average achievers and the lowest 10 were taken as low achievers. Total sixty male students were selected for experiment. On the basis of pre-test top twenty 1-20 were randomly assigned to two groups by use of paired random sampling on their scores on pretest. Similarly on basis of pre-test students having medium marks medium in list from 21-40 were assigned two groups same on base of paired random sampling. Same process was adopted for students having low marks low in list from 41-60 were assigned two groups same on base of paired random sampling. Pre-test, posttest and retention tests were used for data collection. The researcher developed the research instruments in various steps with careful considerations. Data were collected from both the participants of flipped classroom and traditional teaching classroom immediately after treatment of eight academic weeks. Pretest and posttest were administered to compare the performance in pretest and posttest of flipped classroom and non-flipped classroom. After three weeks of experiment, retention test was conducted. Data was collected by researcher on pretest, posttest and retention test. For this purpose the students of both groups were divided into three groups, i.e. high achievers (10 highest rank wise achiever students number 1 to 10 from 30 students), average achievers (10 medium rank wise achiever students number 11 to 20 from 30 students) and low achievers (rank wise lowest achiever students number 21 to 30 from 30 students). This division was made on the basis of pretest scores. To examine significance and difference between means t test (Independent) was used. To examine level of effect, "Cohen's d" test was used.

5.2 Findings

1. It was found that on pretest, male students of flipped teaching method secured mean scores 39.93 whereas male students of traditional teaching method secured mean scores 39.96. The standard deviation of male students taught through flipped teaching was 8.9131 while standard deviation of male students taught through

traditional method was 8.8258. As t value calculated (0.001456) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9884. Cohen's d value was 0.0038. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.1).

2. The study revealed that on pretest, male students taught by flipped teaching method secured mean scores 50.40 whereas male students taught by traditional teaching method secured mean scores 50.50. The standard deviation of male students taught through flipped teaching was 3.9214 while standard deviation of male students taught through traditional method was 3.4721. As t value calculated (0.06038) was lower than t value tabulated (2.10) at 0.05. And p value was found to be 0.9525. Cohen's d value was 0.027. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.2).
3. It was found that on pretest, male students taught by flipped teaching method secured mean scores 39.20 whereas male students taught by traditional teaching method secured mean scores 39.10. The standard deviation of male students taught through flipped teaching was 3.1902 while standard deviation of male students taught through traditional method was 3.0349. As t value calculated (0.07182) was lower than t value tabulated (2.10) at 0.05. And p value was found to be 0.9435. Cohen's d value was 0.032. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.3).
4. One of the findings of the research was that on pretest, male students taught by flipped teaching method secured mean scores 30.20 whereas male students taught by traditional teaching method secured mean scores 30.30. The standard deviation of male students taught through flipped teaching was 1.6865 while standard deviation of male students taught through traditional method was 1.3374. As t value calculated (0.1469) was lower than t value tabulated (2.10) at 0.05. And p value was found to be 0.8848. Cohen's d value was 0.066. Hence, there was no difference found with respect to male students' academic performance in both groups of

flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.4).

5. On pretest, male students taught by flipped teaching method secured mean scores 10.80 whereas male students taught by traditional teaching method secured mean scores 10.90. The standard deviation of male students taught through flipped teaching was 3.1482 while standard deviation of male students taught through traditional method was 3.2654. As t value calculated (0.1208) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9043. Hence there was no difference found in academic achievement scores of male students taught through traditional method and flipped teaching method. Cohen's d value was 0.031. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.5).
6. On pretest, male students taught by flipped teaching method secured mean scores 9.80 whereas male students taught by traditional teaching method secured mean scores 9.60. The standard deviation of male students taught through flipped teaching was 3.6962 while standard deviation of male students taught through traditional method was 3.5594. As t value calculated (0.2135) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9148. Cohen's d value was 0.055. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.6).
7. It was found that on pretest, male students taught by flipped teaching method secured mean scores 8.60 whereas male students taught by traditional teaching method secured mean scores 8.70. The standard deviation of male students taught through flipped teaching was 2.1274 while standard deviation of male students taught through traditional method was 2.3245. As t value calculated (0.1738) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.8626. Cohen's d value was 0.045. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.7).

8. On pretest, male students taught by flipped teaching method secured mean scores 6.50 whereas male students taught by traditional teaching method secured mean scores 6.60. The standard deviation of male students taught through flipped teaching was 2.4714 while standard deviation of male students taught through traditional method was 2.3437. As t value calculated (0.1612) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.8725. Hence there was no difference found in academic achievement scores of male students taught through traditional method and flipped teaching method. Cohen's d value was 0.042. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.8).
9. On pretest, male students taught by flipped teaching method secured mean scores 3.00 whereas male students taught by traditional teaching method secured mean scores 2.90. The standard deviation of male students taught through flipped teaching was 1.5176 while standard deviation of male students taught through traditional method was 1.4391. As t value calculated (0.2619) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.7943. Cohen's d value was 0.068. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.9).
10. On pretest, male students taught by flipped teaching method secured mean scores 1.20 whereas male students taught by traditional teaching method secured mean scores 1.30. The standard deviation of male students taught through flipped teaching was 1.0986 while standard deviation of male students taught through traditional method was 1.1001. As t value calculated (0.3523) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.7809. Cohen's d value was 0.091. Hence, there was no difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.10).
11. On posttest, male students of flipped teaching secured mean scores 61.20 whereas male students of traditional teaching method secured mean scores 52.63. The standard deviation of male students taught through flipped teaching was 12.4938 while standard deviation of male students taught through traditional method was

10.7942. As t value calculated (2.8418) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.006181. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀1a: On posttest achievement scores, no difference will be found in male students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 0.73. On posttest, it manifested the effect of flipped teaching on academic performance of male students (Table 4.11).

12. On posttest, male high achiever students of flipped teaching secured mean scores 75.50 whereas male high achiever students of traditional teaching method secured mean scores 64.90. The standard deviation of male high achiever students taught through flipped teaching was 4.6963 while standard deviation of male high achiever students taught through traditional method was 3.5103. As t value calculated (5.717) was higher than t value tabulated (2.10) at 0.05. And p value was found to be 0.00002022. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀2a: On posttest achievement scores, no difference will be found in male high achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 2.56. On posttest, it manifested the effect of flipped teaching on academic performance of male students (Table 4.12).
13. On posttest, male average achiever students of flipped teaching secured mean scores 61.00 whereas male average achiever students of traditional teaching method secured mean scores 52.80. The standard deviation of male average achiever students taught through flipped teaching was 1.9999 while standard deviation of male average achiever students taught through traditional method was 1.6865. As t value calculated (9.9116) was higher than t value tabulated (2.10) at 0.05. And p value was found to be <0.00001. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀3a: On posttest achievement scores, no difference will be found in male average achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value

was 4.43. On posttest, it manifested the effect of flipped teaching on academic performance of male students (Table 4.13).

14. On posttest, male low achiever students of flipped teaching secured mean scores 47.10 whereas male low achiever students of traditional teaching method secured mean scores 40.20. The standard deviation of male low achiever students taught through flipped teaching was 5.3634 while standard deviation of male low achiever students taught through traditional method was 4.6139. As t value calculated (3.0841) was higher than t value tabulated (2.10) at 0.05. And p value was found to be 0.006398. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀4a: On posttest achievement scores, no difference will be found in male low achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 1.38. On posttest, it manifested the effect of flipped teaching on academic performance of male students (Table 4.14).
15. On posttest, male students taught by flipped teaching method secured mean scores 17.90 whereas male students taught by traditional teaching method secured mean scores 17.70. The standard deviation of male students taught through flipped teaching was 3.8476 while standard deviation of male students taught through traditional method was 3.7993. As t value calculated (0.2026) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.8402. Hence, there was no clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.052. On posttest, it manifested no effect of flipped teaching on academic performance of male students (Table 4.15).
16. On posttest, male students of flipped teaching secured mean scores 14.40 whereas male students of traditional teaching method secured mean scores 12.20. The standard deviation of male students taught through flipped teaching was 3.4327 while standard deviation of male students taught through traditional method was 3.7882. As t value calculated (2.3571) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.02181. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.61. On posttest, it

manifested the effect of flipped teaching on academic performance of male students (Table 4.16).

17. On posttest, male students of flipped teaching secured mean scores 10.80 whereas male students of traditional teaching method secured mean scores 9.40. The standard deviation of male students taught through flipped teaching was 2.0003 while standard deviation of male students taught through traditional method was 2.0125. As t value calculated (2.7024) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.0039013. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.70. On posttest, it manifested the effect of flipped teaching on academic performance of male students (Table 4.17).
18. On posttest, male students of flipped teaching secured mean scores 9.40 whereas male students of traditional teaching method secured mean scores 7.50. The standard deviation of male students taught through flipped teaching was 2.6237 while standard deviation of male students taught through traditional method was 2.1983. As t value calculated (3.0403) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.003543. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.79. On posttest, it manifested the effect of flipped teaching on academic performance of male students (Table 4.18).
19. On posttest, male students of flipped teaching secured mean scores 5.20 whereas male students of traditional teaching method secured mean scores 3.40. The standard deviation of male students taught through flipped teaching was 2.4816 while standard deviation of male students taught through traditional method was 2.9185. As t value calculated (3.1431) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.002634. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.81. On posttest, it manifested the effect of flipped teaching on academic performance of male students (Table 4.19).

20. On posttest, male students of flipped teaching secured mean scores 4.20 whereas male students of traditional teaching method secured mean scores 3.10. The standard deviation of male students taught through flipped teaching was 1.3049 while standard deviation of male students taught through traditional method was 1.2974. As t value calculated (3.2742) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.001789. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.85. On posttest, it indicated that there was effect of flipped teaching on academic achievement of male students (Table 4.20).
21. On retention test, male students of flipped teaching secured mean scores 51.66 whereas male students of traditional teaching method secured mean scores 42.33. The standard deviation of male students taught through flipped teaching was 12.7531 while standard deviation of male students taught through traditional method was 9.5170. As t value calculated (3.2125) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.002149. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀5a: On retention test achievement scores, no difference will be found in male students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 0.83. On retention test, it manifested the effect of flipped teaching on academic performance of male students (Table 4.21).
22. On retention test, male high achiever students of flipped teaching secured mean scores 66.40 whereas male high achiever students of traditional teaching method secured mean scores 53.70. The standard deviation of male high achiever students taught through flipped teaching was 6.9633 while standard deviation of male high achiever students taught through traditional method was 3.1640. As t value calculated (5.2508) was higher than t value tabulated (2.10) at 0.05. And p value was found to be 0.00005412. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀6a: On retention test achievement scores, no difference will be found in male high achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 2.35. On

retention test, it manifested the effect of flipped teaching on academic performance of male students (Table 4.22).

23. On retention test, average achiever male students of flipped teaching secured mean scores 51.20 whereas average achiever male students of traditional teaching method secured mean scores 41.40. The standard deviation of average achiever male students taught through flipped teaching was 1.5491 while standard deviation of average achiever male students taught through traditional method was 3.0258. As t value calculated (9.1166) was higher than t value tabulated (2.10) at 0.05. And p value was found to be $<.00001$. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀7a: On retention test achievement scores, no difference will be found in male average achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 4.08. On retention test, it manifested the effect of flipped teaching on academic performance of male students (Table 4.23).
24. On retention test, male low achiever students of flipped teaching secured mean scores 37.40 whereas male low achiever students of traditional teaching method secured mean scores 31.90. The standard deviation of male low achiever students taught through flipped teaching was 2.3664 while standard deviation of male low achiever students taught through traditional method was 2.6853. As t value calculated (4.8593) was higher than t value tabulated (2.10) at 0.05. And p value was found to be 0.000126. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. So, "H₀8a: On retention test achievement scores, no difference will be found in male low achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 2.17. On retention test, it manifested the effect of flipped teaching on academic performance of male students (Table 4.24).
25. On retention test, male students taught by flipped teaching method secured mean scores 14.50 whereas male students taught by traditional teaching method secured mean scores 14.20. The standard deviation of male students taught through flipped teaching was 3.8847 while standard deviation of male students taught through traditional method was 3.5729 As t value calculated (0.3113) was lower than t value

tabulated (2.00) at 0.05. And p value was found to be 0.7567. Hence there was no clear difference found in academic achievement scores of male students taught through traditional method and flipped teaching method. Hence, there was no clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.08. On retention test, it manifested no effect of flipped teaching on academic performance of male students. Both groups were equal in academic achievement at retention test (Table 4.25).

26. On retention test, male students of flipped teaching secured mean scores 11.90 whereas male students of traditional teaching method secured mean scores 10.30. The standard deviation of male students taught through flipped teaching was 2.9316 while standard deviation of male students taught through traditional method was 2.9047. As t value calculated (2.1235) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.03799. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.55. On retention test, it manifested the effect of flipped teaching on academic performance of male students (Table 4.26).
27. On retention test, male students of flipped teaching secured mean scores 9.90 whereas male students of traditional teaching method secured mean scores 8.10. The standard deviation of male students taught through flipped teaching was 2.1692 while standard deviation of male students taught through traditional method was 2.7536. As t value calculated (2.8125) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.006697. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.73. On retention test, it manifested the effect of flipped teaching on academic performance of male students (Table 4.27).
28. On retention test, male students of flipped teaching secured mean scores 8.10 whereas male students of traditional teaching method secured mean scores 5.80. The standard deviation of male students taught through flipped teaching was 2.9746 while standard deviation of male students taught through traditional method was 2.6934. As t value calculated (3.1394) was higher than t value tabulated (2.00) at

- 0.05. And p value was found to be 0.002663. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.81. On retention test, it manifested the effect of flipped teaching on academic performance of male students (Table 4.28).
29. On retention test, male students of flipped teaching secured mean scores 4.10 whereas male students of traditional teaching method secured mean scores 2.50. The standard deviation of male students taught through flipped teaching was 2.5133 while standard deviation of male students taught through traditional method was 0.9712. As t value calculated (3.2525) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.001909. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.84. On retention test, it manifested the effect of flipped teaching on academic performance of male students (Table 4.29).
30. On retention test, male students of flipped teaching secured mean scores 3.20 whereas male students of traditional teaching method secured mean scores 1.40. The standard deviation of male students taught through flipped teaching was 2.6464 while standard deviation of male students taught through traditional method was 0.9856. As t value calculated (3.4912) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.0009263. Hence, there was clear difference found with respect to male students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.90. On retention test, it manifested the effect of flipped teaching on academic performance of male students (Table 4.30).
31. On pretest, female students of flipped teaching method secured mean scores 44.53 whereas female students of traditional teaching method secured mean scores 44.50. The standard deviation of female students taught through flipped teaching was 8.508 while standard deviation of female students taught through traditional method was 8.576. As t value calculated (0.01514) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9880. Cohen's d value was 0.0039. Hence, there was no difference found with respect to female students' academic

performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.31).

32. On pretest, female students of flipped teaching method secured mean scores 54.70 whereas female students of traditional teaching method secured mean scores 54.60. The standard deviation of female students taught through flipped teaching was 3.1989 while standard deviation of female students taught through traditional method was 3.4383. As t value calculated (0.06734) was lower than t value tabulated (2.10) at 0.05. And p value was found to be 0.9471. Cohen's d value was 0.03. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.32).
33. On pretest, female students of flipped teaching method secured mean scores 43.60 whereas female students of traditional teaching method secured mean scores 43.50. The standard deviation of female students taught through flipped teaching was 2.2386 while standard deviation of female students taught through traditional method was 2.9907. As t value calculated (0.07173) was lower than t value tabulated (2.10) at 0.05. And p value was found to be 0.9436. Cohen's d value was 0.032. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.33).
34. On pretest, female students of flipped teaching method secured mean scores 35.30 whereas female students of traditional teaching method secured mean scores 35.40. The standard deviation of female students taught through flipped teaching was 2.1628 while standard deviation of female students taught through traditional method was 2.3190. As t value calculated (0.09972) was lower than t value tabulated (2.10) at 0.05. And p value was found to be 0.9217. Cohen's d value was 0.045. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.34).
35. On pretest, female students of flipped teaching method secured mean scores 12.40 whereas female students of traditional teaching method secured mean scores 12.50. The standard deviation of female students taught through flipped teaching was 3.7528 while standard deviation of female students taught through traditional

method was 3.6736. As t value calculated (0.1043) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9173. Cohen's d value was 0.027. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.35).

36. On pretest, female students of flipped teaching method secured mean scores 10.50 whereas female students of traditional teaching method secured mean scores 10.40. The standard deviation of female students taught through flipped teaching was 3.5373 while standard deviation of female students taught through traditional method was 3.3456. As t value calculated (0.1125) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9108. Cohen's d value was 0.029. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.36).
37. On pretest, female students of flipped teaching method secured mean scores 8.40 whereas female students of traditional teaching method secured mean scores 8.30. The standard deviation of female students taught through flipped teaching was 3.2502 while standard deviation of female students taught through traditional method was 3.2418. As t value calculated (0.1193) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.9054. Cohen's d value was 0.031. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.37).
38. On pretest, female students of flipped teaching method secured mean scores 7.50 whereas female students of traditional teaching method secured mean scores 7.40. The standard deviation of female students taught through flipped teaching was 2.7316 while standard deviation of female students taught through traditional method was 2.7582. As t value calculated (0.14101) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.8883. Cohen's d value was 0.036. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.38).

39. On pretest, female students of flipped teaching method secured mean scores 3.40 whereas female students of traditional teaching method secured mean scores 3.50. The standard deviation of female students taught through flipped teaching was 1.9136 while standard deviation of female students taught through traditional method was 1.9095. As t value calculated (0.2026) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.8401. Cohen's d value was 0.052. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.39).
40. On pretest, female students of flipped teaching method secured mean scores 2.20 whereas female students of traditional teaching method secured mean scores 2.30. The standard deviation of female students taught through flipped teaching was 0.7667 while standard deviation of female students taught through traditional method was 0.7686. As t value calculated (0.5045) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.6158. Cohen's d value was 0.13. Hence, there was no difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Both groups were equal in academic achievement at pretest (Table 4.40).
41. On posttest, female students of flipped teaching secured mean scores 68.16 whereas female students of traditional teaching method secured mean scores 57.50. The standard deviation of female students taught through flipped teaching was 10.8820 while standard deviation of female students taught through traditional method was 9.5871. As t value calculated (4.0284) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.0001654. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀1b: On posttest achievement scores, no difference will be found in female students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 1.04. On posttest, it manifested the effect of flipped teaching on academic performance of female students (Table 4.41).
42. On posttest, female high achiever students of flipped teaching secured mean scores 81.20 whereas female high achiever students of traditional teaching method secured mean scores 68.50. The standard deviation of female high achiever students taught

through flipped teaching was 2.8982 while standard deviation of female high achiever students taught through traditional method was 3.7193. As t value calculated (8.5173) was higher than t value tabulated (2.10) at 0.05. And p value was found to be $<.00001$. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀2b: On posttest achievement scores, no difference will be found in female high achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 3.81. On posttest, it manifested the effect of flipped teaching on academic performance of female students (Table 4.42).

43. On posttest, female average achiever students of flipped teaching secured mean scores 67.30 whereas female average achiever students of traditional teaching method secured mean scores 57.30. The standard deviation of female average achiever students taught through flipped teaching was 3.1989 while standard deviation of female average achiever students taught through traditional method was 2.4966. As t value calculated (7.7929) was higher than t value tabulated (2.10) at 0.05. And p value was found to be $<.00001$. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀3b: On posttest achievement scores, no difference will be found in female average achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 3.49. On posttest, it manifested the effect of flipped teaching on academic performance of female students (Table 4.43).
44. On posttest, female low achiever students of flipped teaching secured mean scores 56.00 whereas female low achiever students of traditional teaching method secured mean scores 46.70. The standard deviation of female low achiever students taught through flipped teaching was 2.9814 while standard deviation of female low achiever students taught through traditional method was 3.4657. As t value calculated (6.4329) was higher than t value tabulated (2.10) at 0.05. And p value was found to be 0.000004701. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀4b: On posttest achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching

Method and Flipped Teaching Method” was rejected. Cohen’s *d* value was 2.88. On retention test, it manifested the effect of flipped teaching on academic performance of female students (Table 4.44).

45. On posttest, female students taught by flipped teaching method secured mean scores 17.90 whereas female students taught by traditional teaching method secured mean scores 17.70. The standard deviation of female students taught through flipped teaching was 3.6881 while standard deviation of female students taught through traditional method was 3.8352. As *t* value calculated (0.2059) was lower than *t* value tabulated (2.00) at 0.05. And *p* value was found to be 0.8376. Hence, there was no clear difference found with respect to female students’ academic performance in both groups of flipped method and traditional method. Cohen’s *d* value was 0.053. On posttest, it manifested no effect of flipped teaching on academic performance of female students. Both groups were equal in academic achievement at posttest (Table 4.45).
46. On posttest, female students taught by flipped teaching method secured mean scores 15.30 whereas female students taught by traditional teaching method secured mean scores 13.10. The standard deviation of female students taught through flipped teaching was 3.1036 while standard deviation of female students taught through traditional method was 3.1364. As *t* value calculated (2.7309) was lower than *t* value tabulated (2.00) at 0.05. And *p* value was found to be 0.008352. Hence, there was clear difference found with respect to female students’ academic performance in both groups of flipped method and traditional method. Cohen’s *d* value was 0.71. On posttest, it manifested effect of flipped teaching on academic performance of female students (Table 4.46).
47. On posttest, female students of flipped teaching secured mean scores 11.80 whereas female students of traditional teaching method secured mean scores 10.20. The standard deviation of female students taught through flipped teaching was 2.2432 while standard deviation of male students taught through traditional method was 2.1557. As *t* value calculated (2.8169) was higher than *t* value tabulated (2.00) at 0.05. And *p* value was found to be 0.006618. Hence, there was clear difference found with respect to female students’ academic performance in both groups of flipped method and traditional method. Cohen’s *d* value was 0.81. On posttest, it

manifested the effect of flipped teaching on academic performance of female students (Table 4.47).

48. On posttest, female students of flipped teaching secured mean scores 10.80 whereas female students of traditional teaching method secured mean scores 8.30. The standard deviation of female students taught through flipped teaching was 2.9882 while standard deviation of male students taught through traditional method was 2.8676. As t value calculated (3.3063) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.001626. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.85. On posttest, it manifested the effect of flipped teaching on academic performance of female students (Table 4.48).
49. On posttest, female students of flipped teaching secured mean scores 6.70 whereas female students of traditional teaching method secured mean scores 4.50. The standard deviation of female students taught through flipped teaching was 2.6583 while standard deviation of male students taught through traditional method was 2.2305. As t value calculated (3.4725) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.0006059. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.90. On posttest, it manifested the effect of flipped teaching on academic performance of female students (Table 4.49).
50. On posttest, female students of flipped teaching secured mean scores 5.80 whereas female students of traditional teaching method secured mean scores 3.70. The standard deviation of female students taught through flipped teaching was 2.7456 while standard deviation of male students taught through traditional method was 1.5218. As t value calculated (3.6641) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.0005393. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 95. On posttest, it manifested the effect of flipped teaching on academic performance of female students (Table 4.50).

51. On retention test, female students of flipped teaching secured mean scores 61.23 whereas female students of traditional teaching method secured mean scores 48.13. The standard deviation of female students taught through flipped teaching was 11.2454 while standard deviation of female students taught through traditional method was 9.1490. As t value calculated (4.9494) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.00006747. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀5b: On retention test achievement scores, no difference will be found in female students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 1.28. On retention test, it manifested the effect of flipped teaching on academic performance of female students (Table 4.51).
52. On retention test, female high achiever students of flipped teaching secured mean scores 74.60 whereas female high achiever students of traditional teaching method secured mean scores 58.90. The standard deviation of female high achiever students taught through flipped teaching was 3.5652 while standard deviation of female high achiever students taught through traditional method was 3.9285. As t value calculated (9.3584) was higher than t value tabulated (2.10) at 0.05. And p value was found to be <0.00001. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. So, "H₀6b: On retention test achievement scores, no difference will be found in female high achiever students taught through Traditional Teaching Method and Flipped Teaching Method" was rejected. Cohen's d value was 4.19. On retention test, it manifested the effect of flipped teaching on academic performance of female students (Table 4.52).
53. On retention test, female average achiever students of flipped teaching secured mean scores 60.20 whereas female average achiever students of traditional teaching method secured mean scores 47.20. The standard deviation of female average achiever students taught through flipped teaching was 3.8311 while standard deviation of female average achiever students taught through traditional method was 3.8528. As t value calculated (7.6242) was higher than t value tabulated (2.10) at 0.05. And p value was found to be <.00001. Hence, there was clear difference found with respect to female students' academic performance in both groups of

flipped method and traditional method. So, “H₀7b: On retention test achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method” was rejected. Cohen’s d value was 3.41. On retention test, it manifested the effect of flipped teaching on academic performance of female students (Table 4.53).

54. On retention test, female low achiever students of flipped teaching secured mean scores 48.80 whereas female low achiever students of traditional teaching method secured mean scores 38.30. The standard deviation of female low achiever students taught through flipped teaching was 2.9739 while standard deviation of female low achiever students taught through traditional method was 1.4944. As t value calculated (9.9762) was higher than t value tabulated (2.10) at 0.05. And p value was found to be <0.00001. Hence, there was clear difference found with respect to female students’ academic performance in both groups of flipped method and traditional method. So, “H₀8b: On retention test achievement scores, no difference will be found in female low achiever students taught through Traditional Teaching Method and Flipped Teaching Method” was rejected. Cohen’s d value was 4.46. On retention test, it manifested the effect of flipped teaching on academic performance of female students (Table 4.54).
55. On retention test, female students taught by flipped teaching method secured mean scores 17.10 whereas female students taught by traditional teaching method secured mean scores 16.40. The standard deviation of female students taught through flipped teaching was 4.6276 while standard deviation of female students taught through traditional method was 4.5568. As t value calculated (0.5904) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.5572. Hence, there was clear difference found with respect to female students’ academic performance in both groups of flipped method and traditional method. Cohen’s d value was 0.15. On retention test, it manifested no effect of flipped teaching on academic performance of female students. Both groups were equal in academic achievement at retention test (Table 4.55).
56. On retention test, female students taught by flipped teaching method secured mean scores 14.20 whereas female students taught by traditional teaching method secured mean scores 12.30. The standard deviation of female students taught through flipped teaching was 2.8273 while standard deviation of female students taught

through traditional method was 2.7545. As t value calculated (2.7215) was lower than t value tabulated (2.00) at 0.05. And p value was found to be 0.08565. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.70. On retention test, it manifested effect of flipped teaching on academic performance of female students (Table 4.56).

57. On retention test, female students of flipped teaching secured mean scores 10.80 whereas female students of traditional teaching method secured mean scores 8.20. The standard deviation of female students taught through flipped teaching was 3.4794 while standard deviation of male students taught through traditional method was 2.7381. As t value calculated (3.22164) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.002124. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.83. On retention test, it manifested the effect of flipped teaching on academic performance of female students (Table 4.57).
58. On retention test, female students of flipped teaching secured mean scores 8.50 whereas female students of traditional teaching method secured mean scores 5.90. The standard deviation of female students taught through flipped teaching was 3.1758 while standard deviation of male students taught through traditional method was 2.6947. As t value calculated (3.4192) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.001155. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's d value was 0.88. On retention test, it manifested the effect of flipped teaching on academic performance of female students (Table 4.58).
59. On retention test, female students of flipped teaching secured mean scores 5.10 whereas female students of traditional teaching method secured mean scores 2.90. The standard deviation of female students taught through flipped teaching was 3.9837 while standard deviation of male students taught through traditional method was 2.8761. As t value calculated (3.5672) was higher than t value tabulated (2.00) at 0.05. And p value was found to be 0.007315. Hence, there was clear difference found with respect to female students' academic performance in both groups of

flipped method and traditional method. Cohen's *d* value was 0.92. On retention test, it manifested the effect of flipped teaching on academic performance of female students (Table 4.59).

60. On retention test, female students of flipped teaching secured mean scores 4.50 whereas female students of traditional teaching method secured mean scores 1.90. The standard deviation of female students taught through flipped teaching was 3.3466 while standard deviation of male students taught through traditional method was 1.225. As *t* value calculated (3.7363) was higher than *t* value tabulated (2.00) at 0.05. And *p* value was found to be 0.0004286. Hence, there was clear difference found with respect to female students' academic performance in both groups of flipped method and traditional method. Cohen's *d* value was 0.96. On retention test, it manifested the effect of flipped teaching on academic performance of female students (Table 4.60).

5.3 Discussion

The prime objective of this study was to investigate the impact of the flipped teaching approach on the academic performance of secondary level students in the subject of English. The study investigated the comparative effectiveness of flipped teaching and traditional teaching methods. The findings of the study demonstrated that the implementation of flipped teaching resulted in a favorable impact on students' academic performance. Day and Foley (2006) conducted a study that supports this finding, as they found that students in the flipped teaching environment achieved significantly higher scores on their academic performance.

In his study conducted in 2014, Al Rowais investigated the influence of flipped learning on achievement and attitudes in higher education. The findings of this research suggested that there were encouraging outcomes in terms of students' academic performance as well as their attitude towards the subject matter. Additionally, according to Al-Zahrani's (2015) study, the flipped classroom had received influential place for cognitive development by students as they expressed overall satisfaction with this teaching method. Furthermore, the study conducted by Prefume in 2015 delved into the impact of implementing a flipped classroom approach within a Japanese language classroom. The flipped classroom approach was met with favorable attitudes, as revealed by the qualitative data from the students. Gross et al. conducted the research.

In 2015, the effectiveness of the flipped classroom model was examined with regards to student engagement, student satisfaction, and academic performance. The students in the flipped courses were found to exhibit high levels of engagement and satisfaction with the course. Moravec et al. (2010) also provide support for this finding. In 2010, his research report was published indicating that the flipped model was beneficial for students' performance, leading to a reasonable increase in their scores on exam questions. Additionally, these conclusions are bolstered by various other research investigations. Davies et al., (2013) conducted a mixed-methods study with 207 participants enrolled in a technology course. Other studies exploring academic outcomes and achievements have also been done. The researchers discovered that students who received flipped instruction demonstrated a noteworthy improvement in their academic performance. According to their study, it was determined that the improved academic performance was a result of the flipped teaching instruction method, which enabled self-paced learning. According to the authors, it was observed in a survey among students that there was a higher inclination for them to enroll in another flipped course in the coming times. The research findings regarding the effectiveness of flipped teaching align with the results of Talley and Scherer's study (2013). In a study by Talley and Scherer (2013), college psychology students were examined using a mixed-methods approach. The results showed that, apart from improved academic performance, these students demonstrated higher levels of retention and engagement compared to those in a traditional method class. This may be due to increased interest of students towards flipped teaching. Videos capture attention of students. Students' attitude towards learning is enhanced and they watch videos with keen interest. As a result of watching videos and teachers' asking about main theme and details of videos, students' learning is increased. This study clearly showed that comparative effectiveness of flipped teaching was much better as compared to traditional method.

The findings of this study revealed that flipped teaching group performed much better than traditional group. The following studies supported the results of researcher's study. Hashemefardnia et al., (2018) revealed that flipped teaching had much promised results on learning of students. Estrada in 2019 executed a study in which was concluded that students focused learning and performance of students of university were improved by flipping class. The study conducted by Loizoiu and Kyubgmei in

2020 resulted in favour of potential outcomes of flipped based class. Higher level cognition was developed by flipped methodology. It was revealed by conclusions of William et al., (2020), flipped methodology showed superiority over traditional classroom and accounting students enhanced performance was seen. In Covid 2019 in classroom, use of flipped methodology resulted in higher performance of students as found by Beasson et al. in 2021. They found better performance of students by online and flipped methodology. In similar way, in study of Wayatt (2021), flipped methodology proved effectiveness over traditional methodology in era of covid. In the study of Zhui (2021), main conclusion was that numerous studies manifested enhanced performance of students by flipped methodology when it was used verses traditional methodology. According to Khoasa and Burich (2023), students' relatedness cognitive needs, autonomy and competence was enhanced by flipped teaching with respect to motivation. According to the findings of the study of Ayberdi et al., (2023), most of the meta-analysis manifested that flipped teaching had influential effect on learning of students.

Jarrah and Diab's (2019) experimental study on teaching methods, which also favored the flipped teaching approach. Additionally, Morzee et al. (2019) conducted a study on the efficacy of incorporating the subject of English for academic progress. Their research found that the implementation of the flipped method aligned with cognitive domains of academic achievement, thus further corroborating the findings of the present study. In the study by Georgiadu et al. (2017), they also examined the efficacy of the flipped teaching approach and its impact on academic performance. Interestingly, their findings aligned with the results obtained in the present research.

A key finding from the research is that experimental group performed better because reason behind was increased interaction and engagement of students in flipped teaching. Students engage with the online components of a flipped class promptly in comparison to students in a traditional-format class. Specifically, students in the flipped course diligently prepare for class assignments and avoid last-minute studying for assessments, complete online tasks with greater accuracy, and achieve higher scores on summative evaluations. The role of the flipped-class environment in facilitating these improvements is a significant question. We believe that two factors contribute to this enhancement in the flipped class: the incorporation of active student exercises during in-person sessions and the availability of online course content. Undoubtedly, active-

learning classrooms enhance student outcomes, and it has been argued that in a flipped course, it is the active learning approach that drives improved student performance (Jensen et al., 2015). According to Li (2018), it was evident that the active flipped classroom fosters students' anticipation that attending class necessitates preparation. Furthermore, the active classroom, with its inclusion of activities that earn points, inherently motivates students to attend and actively participate. The flipped classroom model offers a clear and reinforcing structure that supports students' academic progress.

The study revealed that females of traditional teaching and flipped teaching did not statistically differ on their performance on first level of Bloom Taxonomy. While marks of female students of traditional group as well as flipped group more than male students and also on levels of Bloom's Taxonomy (Although this comparison was neither objective of study nor it was done, it is just the view point based on data analysis). The results obtained were in line with those of Zainuddin and Halili (2016) who discovered that there was no remarkable difference in performance between lecture-based and flipped classroom approaches when assessing lower-order Bloom taxonomy skills in exams. However, the flipped classroom approach yielded better student performance in higher-order Bloom taxonomy skills. The study found that for low achievers, flipped teaching served as an effective tool. This finding is also supported by the finding of O'Flaherty and Phillips (2015). The study determined that students with lower academic performance in the flipped classroom setting exhibited greater competence compared to those in the traditional classroom. Also, this research manifested that high achievers of flipped teaching performed well as compared to high achievers of traditional teaching group. This finding for high achievers were supported by Davies et al., (2013).

The study's findings demonstrate a statistically significant impact of flipped teaching on the academic performance of both high achievers and low achievers. This conclusion is corroborated by Yang et al. (2014), who observed that both high and low achievers outperformed their counterparts in an experimental study. Additionally, this study revealed that average achiever students taught using the flipped method exhibited superior performance compared to those taught using the traditional method. These results are further supported by Fulton's (2012 b) research. It was concluded by Fulton (2012 b) that all students' inclination was towards flipped teaching whether they belonged to high achievers, average achievers or low achievers.

The experimental group, instructed through the flipped teaching method, demonstrated a notable proficiency in retaining knowledge across all six levels of the cognitive domain. The results of the retention test provided support for the retention of all six levels, thus favoring the findings of the present research on the cognitive domain. Ugwuanyi et al. in 2020 concluded that the flipped method was found to be superior in promoting the retention of academic achievements in the field of Physics. Similarly, Graham et al. in 2017 discovered the effectiveness of knowledge retention in their experimental investigation. Lazzari (2023) conducted a research study on the subject of mathematics in to investigate the impact of flipping the class. The findings revealed that flipping the class was effective for the learning of students. The findings of the current experimental research were further supported by Oraif (2018), and Valizadah and Sultanpour (2020).

This study was carried out on students of English class. Findings of this research are similar as the findings of Yang (2017) who concluded that teachers argued that as compared to traditional method, flipped method resulted in much better creativity of students and it is very fruitful in teaching of grammar. Teachers were of the view that flipped method was much practical and result oriented. The results are also supported by the study of Chen, (2020) who concluded that flipped classroom helped to increase the teaching and learning effectiveness within the restricted class hour in the subject of English. Learners were more responsible for their learning and enhanced their independent learning skills. The results of this research are aligned with previous studies examining the impact of flipped classrooms on English learners' education. Abedi et al. (2019) presented evidence showcasing the positive effects of this teaching approach. The purpose of this study was to examine and evaluate the influence of flipped classroom instruction in comparison to traditional instruction on intermediate learners' English composition writing skills. The findings revealed that the group subjected to the experiment exhibited better results on the post-test compared to the control group. Furthermore, a notable disparity in writing performances between the two groups was observed on the post-test. In a similar context, Zainuddin and Perera (2019) conducted a study to explore the disparities between a flipped classroom and a traditional classroom writing instructional model. Their research revealed that the flipped-class environment had a favorable impact on students' intrinsic motivation. According to the interviews conducted with the students, it was found that their

motivation stemmed from various factors. These included the video-recorded lectures, self-regulated learning environments, active participation in class activities, and interaction with their peers. According to this study, the implementation of a flipped classroom model in the educational setting effectively met the fundamental psychological necessities.

The present study's findings indicated that both male and female students demonstrated improvement in their achievement when taught in a flipped classroom approach. These findings are against the finding of Ikwuka and Okoye (2022) who concluded that flipped teaching was comparatively more effective for male students.

In this study students of flipped group performed very better as compared to students of traditional group. These results support the studies of Aronson et al., (2013), Ferreri & O'Connor, (2013), Ruddick, (2012). According to Aronson et al., (2013), the flipped learning approach resulted in students achieving more than double the scores of their counterparts in the traditional learning environment, primarily owing to the utilization of interactive learning methods. In today's generation, students anticipate that technology will be employed to bolster their educational experience. Therefore, in order to enhance the effectiveness of learning, teaching methods must surpass conventional lecture instructions. According to Ferreri and O'Connor (2013), the flipped classroom offers students greater support, flexibility, and increased productivity during class time compared to a traditional lecture setting and results in better performance of students. According to research by Ruddick (2012), the implementation of flipped learning technology has resulted in students achieving faster progress, enhanced understanding of topics, and increased coverage of additional content, all while maintaining the quality of the course.

In their research, Jensen et al. (2015) conducted a comparison between an active non-flipped classroom and an active flipped classroom. According to the findings, it was determined that there is no significant difference in academic achievements or attitudes between the flipped classroom and non-flipped classroom when both employ an active-learning, constructivist approach. The results suggest that the academic achievements observed in either scenario are likely due to the active-learning instructional style rather than the sequence in which the teacher engages in the learning process. Although a few pioneering studies in STEM fields have reported periodic

evidence, there was little knowledge regarding the learning outcomes and L2 student perceptions in non-STEM higher education, such as an L2 classroom.

The study found that the implementation of flipped teaching resulted in an improvement in students' academic performance. The study conducted by Ayberdi (2023) was backed by these findings. Haghighi et al. (2019) conducted a study to examine the effects of a flipped classroom on the improvement of learners' pragmatic competency. According to the results, it was found that students belonging to the flipped group displayed a higher level of engagement with the course materials compared to their counterparts in the traditional group. Notably, these students also exhibited significantly better performance in the post-test. According to the questionnaires, it was noticed that the majority of participants in the flipped group expressed their enjoyment towards learning English in a flipped learning environment. In a previous study, Yujing (2015) investigated the connection between flipped classroom and student perception of empowerment in a Chinese English writing course. The findings indicated a noticeable difference in favor of the impact of flipped classroom between the experiment class and the control class. According to research of Hung (2015), both structured and semi-structured flip lessons were found to contribute to enhanced learning outcomes, improved attitudes towards learning, and increased effort in the learning process.

In addition to supporting research of Han (2015), the findings of this study are also consistent with the studies conducted by Chen et al. (2018), and Schultz et al. (2014). According to Han (2015), Chen et al., (2018) and Schultz et al., (2014), the flipped classroom approach was found to have a positive influence on learners performance. Conversely, in a study by Jamaludin and Osman (2014), it was concluded that emotional engagement is a crucial factor for active learning to take place. Several studies have explored the introduction of flipped classrooms, resulting in varied findings (Chen et al., 2018). Among these, Schultz et al. (2014) focused specifically on the impact of a flipped classroom and innovative learning activities on academic success and nursing students' satisfaction. An experiment was conducted to compare three learning approaches: the traditional lecture method, the flipped classroom approach, and the innovative classroom activities approach. The flipped classroom yielded better examination scores. While flipped teaching led to enhanced learning outcomes, it did not always result in increased student satisfaction.

There are several issues addressed in this discussion, each of which carry implications that should be considered for future research. Future researchers must address certain challenges encountered in implementing the flipped classroom approach. Specifically, they need to tackle issues surrounding the suitability of video lectures with poor quality and the lack of training among teachers. Hence, it is imperative to sustain and advance this field of study in Pakistan for further research, in order to contribute to the existing knowledge based on the flipped classroom methodology. Flipped learning videos should motivate students to both engage and observe when it comes to online video lectures. When creating online videos, various elements like animation, cartoons, and music can be incorporated to captivate students and encourage them to watch. In the practice of the flipped classroom, while video and online platforms are indeed important tools, the teacher must not overlook other crucial factors that play a role in students' successful learning. These factors include the level of interaction among students, their motivation, and their engagement in the learning process. Based on the study's findings, the researcher suggests the necessity of conducting studies that investigate the implementation of flipped learning in informal and non-formal learning settings, as well as for part-time students who have limited time for independent preparation. Consequently, the application of flipped learning should not be limited to secondary education but also focus should be on higher education, or college levels or primary level. The spectrum of research on flipped should also be extended to encompass all environments of modern era like City schools and Beacon House schools. The researcher asserts that if the flipped classroom is implemented correctly and thoughtfully, it can serve as an effective instructional model that facilitates the development of higher-order cognitive skills in students, aligning with Bloom's revised taxonomy for the cognitive domain. Furthermore, the researcher recommends that future studies on flipped classrooms employ diverse research designs, including experimental research across different grade levels, observational studies, and case studies.

This study has provided clear evidence that the implementation of flipped teaching is effective in improving students' academic performance. Moreover, it is evident that flipped teaching has transformed the prevailing culture of students' learning, shifting it from being lecturer-centered to student-centered, resulting in a greater emphasis on students' participation during classroom activities. This has

resulted in more class activities being done by students and students' active engagement in activities. Due to the limited time allotted for lectures, students now have more opportunities to practice the lesson materials at home before actual class and in class with their peers. The study has aided in enhancing comprehension about the utilization of technology in educational endeavors. The results of this study have contributed to better understanding of use of flipped method in comparison with traditional method of teaching in teaching-learning activities. Government officials and policymakers should consider adopting the flipped classroom model as a modern approach to secondary level. Finally, the findings and discussion of this study will contribute to deeper understanding of future research in Pakistan in the perspective of flipped teaching and flipped classrooms.

5.4 Conclusions

1. It was concluded that male students taught by flipped teaching method got more marks as compared to male students taught through traditional method on post-test. This was due to flipped teaching. Flipped teaching created clear difference in achievement of students. It indicated that there was effect of flipped teaching on academic achievement of male students. It was also concluded that female students of experimental group had more achievement scores as compared to female students of control group on post-test. It indicated that flipped teaching proved to be more effective in terms of female students' academic achievement as compared to traditional teaching.
2. High achiever male students taught by flipped teaching got more marks as compared to high achiever male students taught through traditional method on post-test. It showed that flipped teaching had effect on academic achievement of high achiever male students. On post-test, male average achiever students taught through flipped teaching achieved high marks as compared to average achiever male students taught by traditional method. It indicated that flipped teaching was effective in academic achievement of male average achievers. Similarly, male low achiever students taught through flipped teaching achieved high marks as compared to male low achiever students taught by traditional method on posttest. It showed that flipped teaching had positive effect on academic achievement of male low achievers. It was also concluded that high achiever female students of experimental group performed better as compared to high achiever female students of control

group on post-test. Same situation of results was shown in average achiever students among female of both groups and female low achievers of control and experimental group on post-test achievement scores. Average achiever female students of experimental group achieved high performance scores as compared to average achiever female students of control group on posttest. Likewise, low achiever female students of experimental group achieved high marks as compared to low achiever female students of control group. It indicated that flipped teaching resulted in better achievement of female students in overall group wise and also in all three categories, high achievers, average achievers and low achievers on posttest.

3. On Post-test, the comparison of both groups of male students on test items related to levels of revised Bloom taxonomy showed that there was no significant difference between both control and experimental achievement scores on Remember level i.e. first level of revised Bloom Taxonomy. But on the other five levels Understand, Apply, Analyze, Evaluate and Create, results were in favor of experimental group on post test scores. It indicated that there was effect of flipped teaching on academic achievement of male students on Understand, Apply, Analyze, Evaluate and Create level. On Post-test, the comparison of both groups of female students on test items related to levels of revised Bloom taxonomy showed similar result that there was no significant difference between both control group and experimental group achievement scores on Remember level i.e. first level of revised Bloom Taxonomy. But on other five levels Understand, Apply, Analyze, Evaluate and Create, results were in favor of experimental group on post test scores. It indicated that there was effect of flipped teaching on academic achievement of female students.
4. Male students taught through flipped teaching got more marks as compared to male students taught by traditional method on retention test. It was concluded that there was positive effect of flipped teaching on retention of male students. On retention test, female students of experimental group performed better in comparison with female students of control group. It manifests that there was clear effect of flipped teaching on academic performance of female students on retention test.
5. Male and female high achiever students taught by flipped teaching got more marks as compared to male and female high achiever students taught by traditional

method. On retention test, male as well as female average achiever students taught through flipped teaching secured more marks as compared to average achiever male and female students taught by traditional teaching. Male and female low achiever students taught through flipped teaching got more marks as compared to male and female low achiever students taught by traditional teaching. It showed that flipped teaching had positive effect on retention of male and female high achievers, average achievers and low achievers.

6. Male students taught by flipped teaching showed better performance on five levels of Revised Bloom Taxonomy Understand, Apply, Analyze, Evaluate and Create on retention test. It showed that there was effect of flipped teaching on retention of male students. On retention-test, female students of flipped teaching group got high marks also on five levels of Revised Bloom Taxonomy Understand, Apply, Analyze, Evaluate and Create. It was concluded that there was effect of flipped teaching on retention of female students. Only on first level i.e. remember level there was no clear difference in performance of male students. Similarly, on first level Remember there was no clear difference in performance female students of flipped teaching group and traditional teaching group. The flipped teaching proved better in retention of male and female students on test items based on Bloom Taxonomy.

It is concluded that flipped teaching had significant effect of flipped teaching on the academic achievement on post-test and as well as on retention of male and female students.

5.5 Recommendations

Following recommendations are made on the basis of findings and conclusions:

1. Findings indicated that flipped teaching method had positive effect on academic achievement of male and female students. Therefore, it is recommended for teachers to use flipped teaching method in secondary level English class. Findings showed that flipped teaching proved effective in improving academic achievement of high, average and low achiever students. Therefore it is recommended to use flipped teaching method in teaching of English at secondary level.

2. Findings manifested that flipped teaching proved better in enhancing retention of students. So it is recommended for teachers to use flipped teaching method in English class at secondary level. Findings indicated that flipped teaching has positive effect on retention of high, average and low achiever students. Therefore it is recommended for teachers to use flipped teaching method in teaching of English at secondary level.
3. Keeping in view the importance of English as one of the most important subjects, especially in developing countries like Pakistan, the English teaching staff may be encouraged to teach through flipped teaching approach. They should be facilitated to initiate and implement flipped teaching accurately as it enhances the interest and motivation of students. Technology literacy is essential for teachers and students. Teachers and learners need to upgrade themselves to be able to apply the flipped classroom in their teaching and learning process.
4. When curriculum development process takes place in Pakistan, textbooks for English at secondary level are given priority for units/lessons and exercises based on traditional method. The curriculum developers may focus on preparation and recommendation of innovative methods of teaching in revised curriculum of English. The present study supports the implementation of the flipped teaching approach for teaching English. In textbooks, recommendations should be provided on how and when to utilize the flipped teaching method for each chapter. These suggested additions will serve as a valuable guide for teachers, ultimately leading to improved student achievements in English.
5. The government should take the responsibility of organizing regular national workshops to promote and enhance the significance of the flipped teaching method in secondary schools. By doing so, the utilization of flipped teaching can gain popularity in Pakistan. Teachers' willingness is mandatory for application of flipped teaching. If teachers are willing to accept change then this method can be executed fruitfully. Access to technology is also necessary for this approach. Results and findings of this study indicated clearly that flipped teaching had effect on academic achievement of students. It had not only effect on high achievers but

also on average achievers and low achievers. Results would be different if flipped approach will be launched in schools.

Recommendations for Future Researchers

1. This study examined the effect of flipped teaching method on academic achievement in English. Further studies may be conducted to investigate the effect of flipped teaching approach another dependent variables such as study attitude, self-esteem, peer relations, self-efficacy, academic self-efficacy, academic motivation, self-concept and academic self-concept.
2. Secondary level was focused in this study. Future studies may focus on primary level, college level and university level education. Future studies may be conducted having larger samples and with also observation or questionnaires as tools.
3. In this study, male and female students' comparison was not done as it was not demand of topic and objectives of the study. It is recommended for future researchers to do comparison of male and female students' academic achievement.
4. As the present study was delimited only to teaching of English through flipped teaching method, further studies be launched to investigate the effectiveness of flipped teaching for different subjects.

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APPENDIX A
(PRE-TEST, POST-TEST and RETENTION TEST)

Pre Test (Time 2 hours)

Marks Obtained:

Total Marks: 100

Student Number:

Male/ Female

Q1: Write meanings of any TEN of the following words.

(10*1=10 Marks, Level Remember)

Words	Meanings	Words	Meanings
Ignorance		Motherland	
Patriot		Saviour	
Migration		Adorned	
Interior		Numerous	
Embellish		Impressive	
Devotion		Flamboyant	

Q 2: Write short answers of the any FIVE of the following questions.

(5*2=10 Marks, Level Remember)

1. What type of land is Arabia?

2. For which ability were the Arabs famous?

3. What is the highest military award of Pakistan?

4. Who was Hazrat Abdullah bin Zubair?

5. Which incident in the story shows Hazrat Asma's love and respect for the Rasool (SAWW)?

6. Who constructed Masjid Sophia?

7. What was the purpose of hanging a heavy iron chain at the entrance of the court?

Q 3: Write down answers of any FIVE of the following questions:

(5*2=10 Marks, Level Understand)

1. Why did the Holy Prophet (P.B.U.H) stay in the cave of Hira?

2. What message do you get from the life of Hazrat Asma (RA)?

3. What can be the possible solution to our present problems?

4. How can we become a strong nation?

5. Why is the Sultan Ahmed Masjid also known as the Blue Masjid?

6. How has the poet heightened the impact of the poem by using figurative language?

7. How did the interior of the masjid look like?

Q 4: Identify and select the matching word of column A with B to find the meanings of the words: (10*1=10 Marks, Level Understand)

Column A	Column B
Charm	Eliminate
Compose	Belief
Civilization	Pride
Eradicate	Edge
Wonder	Living example
Everlasting	Write
Dignity	Attraction
Embodiment	Never-ending
Verge	Surprise
Faith	Culture

Q 5: Change the Voice of the any FIVE of the following: (5*2=10 Marks, Level Apply)

1	Aslam eats apples.	
2	She was singing a song.	
3	He will write a letter.	
4	I bought a mobile.	
5	They have bought a horse.	
6	Ali is playing cricket.	
7	She reads many books.	

8	The door of car was opened by the driver.	
9	They have won the match.	
10	I was given ten rupees by her.	

Q 6: Use any TEN of the following words into sentences:

(10*1=10 Marks, Level Apply)

Sacrifice: _____

Prosperity: _____

Responsible: _____

Companion: _____

Mad with anger: _____

Determined: _____

Pass through: _____

Decided: _____

Commendable: _____

Impressive: _____

Spacious: _____

Humility: _____

Q 7: Read the following passage carefully and answer the questions given at the end. (5*2=10 Marks, Level Analyze)

Once a stag was drinking water at a stream. He happened to see his reflection in the water. He was pleased to see his beautiful horns, but when he saw his thin legs, he felt sad as he thought they were ugly. Suddenly he saw a pack of hounds at a distance. He ran as fast as his legs could help him. Soon he left the hounds far behind. He had to pass through a thick forest of bushes. His horns were caught in a bush. He tried hard to pull his horns out of it but all in vain. By now, the hounds had come up. They fell upon him and tore him to pieces.

Questions: i) What was stag doing? _____

ii) What did stag saw in the water? _____

iii) Why was stag pleased? _____

iv) What made stag sad? _____

v) Why did stag run? _____

Q 8: Main theme of the poem “Daffodils”.

(OR)

Conclude the main idea/theme of the lesson “Quaid’s Vision and Pakistan”.

(10 Marks, Level Analyze)

Answer: _____

Post Test (Time 2 hours)

Marks Obtained:

Total Marks: 100

Student Number:

Male/ Female

Q 1: Write short answers of the any FIVE of the following questions.

(5*2=10 Marks, Level Remember)

1. Who was Hazrat Abdullah bin Zubair?

2. What was the purpose of hanging a heavy iron chain at the entrance of the court?

3. Which incident in the story shows Hazrat Asma's love and respect for the Rasool (SAWW)?

4. For which ability were the Arabs famous?

5. Who constructed Masjid Sophia?

6. What type of land is Arabia?

7. What is the highest military award of Pakistan?

Q 2: Identify and select the matching word of column A with B to find the meanings of the words:

(10*1=10 Marks, Level Understand)

Column A	Column B
Embodiment	Edge
Dignity	Surprise
Everlasting	Attraction
Faith	Write
Verge	Pride
Civilization	Eliminate
Compose	Never ending
Wonder	Living Example
Charm	Belief
Eradicate	Culture

Q 3: Write down answers of any FIVE the following questions:

(5*2=10 Marks, Level Understand)

1. How did the interior of the masjid look like?

2. How has the poet heightened the impact of the poem by using figurative language?

3. Why is the Sultan Ahmed Masjid also known as the Blue Masjid?

4. What message do you get from the life of Hazrat Asma (RA)?

5. How can we become a strong nation?

6. Why did the Holy Prophet (P.B.U.H) stay in the cave of Hira?

Q 5: Write meanings of any TEN of the following words.

(10*1=10 Marks, Level Remember)

Words	Meanings	Words	Meanings
Impressive		Embellish	
Adorned		Numerous	
Interior		Flamboyant	
Patriot		Devotion	
Motherland		Ignorance	
Migration		Saviour	

Q 9: Use any TEN of the following words into sentences:

(10*1=10 Marks, Level Apply)

Impressive: _____

Humility: _____

Pass through: _____

Decided: _____

Spacious: _____

Prosperity: _____

Commendable: _____

Companion: _____

Mad with anger: _____

Sacrifice: _____

Responsible: _____

Determined: _____

Q 10: Compile in one paragraph “the uses and abuses of Mobile Phones”.

(OR)

Compile in one paragraph “the Kindness of the Rasool (PBUH)”?

(05 Marks, Level Create)

Answer: _____

Retention Test (Time 2 hours)**Marks Obtained:****Total Marks: 100****Student Number:****Male/ Female****Q 1: Write short answers of the any FIVE of the following questions.****(5*2=10 Marks, Level Remember)****8. Who was Hazrat Abdullah bin Zubair?**

9. What was the purpose of hanging a heavy iron chain at the entrance of the court?

10. Which incident in the story shows Hazrat Asma's love and respect for the Rasool (SAWW)?

11. For which ability were the Arabs famous?

12. Who constructed Masjid Sophia?

13. What type of land is Arabia?

14. What is the highest military award of Pakistan?

Q 2: Identify and select the matching word of column A with B to find the meanings of the words:

(10*1=10 Marks, Level Understand)

Column A	Column B
Embodiment	Edge
Dignity	Surprise
Everlasting	Attraction
Faith	Write
Verge	Pride
Civilization	Eliminate
Compose	Never ending
Wonder	Living Example
Charm	Belief
Eradicate	Culture

Q 3: Write down answers of any FIVE the following questions:

(5*2=10 Marks, Level Understand)

8. How did the interior of the masjid look like?

9. How has the poet heightened the impact of the poem by using figurative language?

10. Why is the Sultan Ahmed Masjid also known as the Blue Masjid?

11. What message do you get from the life of Hazrat Asma (RA)?

12. How can we become a strong nation?

13. Why did the Holy Prophet (P.B.U.H) stay in the cave of Hira?

Q 5: Write meanings of any TEN of the following words.

(10*1=10 Marks, Level Remember)

Words	Meanings	Words	Meanings
Impressive		Embellish	
Adorned		Numerous	
Interior		Flamboyant	
Patriot		Devotion	
Motherland		Ignorance	
Migration		Saviour	

Q 9: Use any TEN of the following words into sentences:

(10*1=10 Marks, Level Apply)

Impressive: _____

Humility: _____

Pass through: _____

Decided: _____

Spacious: _____

Prosperity: _____

Commendable: _____

Companion: _____

Mad with anger: _____

Sacrifice: _____

Responsible: _____

Determined: _____

Q 10: Compile in one paragraph “the uses and abuses of Mobile Phones”.

(OR)

Compile in one paragraph “the Kindness of the Rasool (PBUH)”?

(05 Marks, Level Create)

Answer: _____

Appendix B

Certificates of Validation

1. Dr. Riasat Ali, Professor, Department of Education, Abdul Wali Khan University Mardan
2. Dr. Saqib Shahzad, Associate Professor, Department of Education, Abdul Wali Khan University Mardan
3. Dr. Wajeeha Kanwal, Assistant Professor, Department of Education, University of Wah, Wah Cantt.

Validation Certificate of Research Tools

This is to certify that the research tools (Pre Test, Post Test and Retention Test) developed by the researcher Syeda Tasneem Zahra (Reg.No: 675-PhD/Edu/S-17) on research topic: "Effect of Flipped Teaching on the Academic Achievement of Secondary School Students in English" have been assessed by me. The developed research tools meet the demand of topic and objectives of the study. These are valid for data collection from control group and experimental group.

Signature of Expert: Riasat Ali

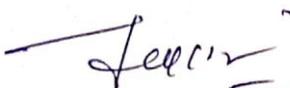
Name: Prof. Dr. Riasat Ali

Designation: Professor

Dated: 7th September, 2022.

Validation Certificate of Research Tools

This is to certify that the research tools (Pre Test, Post Test and Retention Test) developed by the researcher Syeda Tasneem Zahra (Reg.No: 675-PhD/Edu/S-17) on research topic: "Effect of Flipped Teaching on the Academic Achievement of Secondary School Students in English" have been assessed by me. The developed research tools meet the demand of topic and objectives of the study. These are valid for data collection from control group and experimental group.

Signature of Expert:  _____

Name: Dr. Saqib Shahzad

Designation: Associate Professor

Dated: 7th September, 2022.

Certification of Validation of Research Tools

This is to certify that the research tools (Pre Test, Post Test and Retention Test) developed by the researcher Syeda Tasneem Zahra (Reg.No: 675-PhD/Edu/S-17) on research topic: "Effect of Flipped Teaching on the Academic Achievement of Secondary School Students in English" have been assessed by me. The developed research tools meet the demand of topic and objectives of the study. These are valid for data collection from control group and experimental group.

Signature of Expert: _____



Name: _____

Dr. Wajaha Kanwal

Designation: _____

Assistant Professor.

Dated: 9th September, 2022.

Appendix C

Marks of Male Students

Marks of Male Students (Control Group)

Serial Number	Pre Test	Post Test	Retention Test
1	57	69	59
2	55	69	58
3	53	68	56
4	51	64	54
5	50	65	54
6	49	67	53
7	48	65	52
8	48	63	50
9	47	60	51
10	47	59	50
11	43	56	46
12	43	53	45
13	43	52	44
14	40	52	44
15	39	55	40
16	38	53	40
17	37	53	40
18	37	52	39
19	36	52	38
20	35	50	38
21	32	46	36
22	32	45	36
23	31	46	32
24	31	44	33
25	31	40	31
26	30	38	30
27	30	37	33
28	29	36	29
29	29	35	31
30	28	35	28

**High Achievers, Average Achievers and Low Achievers of Male
Students (Control Group)**

Serial Number	Pre Test	Post Test	Retention Test	Level of Students
1	57	69	59	High Achievers
2	55	69	58	
3	53	68	56	
4	51	64	54	
5	50	65	54	
6	49	67	53	
7	48	65	52	
8	48	63	50	
9	47	60	51	
10	47	59	50	

Serial Number	Pre Test	Post Test	Retention Test	Level of Students
11	43	56	46	Average Achievers
12	43	53	45	
13	43	52	44	
14	40	52	44	
15	39	55	40	
16	38	53	40	
17	37	53	40	
18	37	52	39	
19	36	52	38	
20	35	50	38	

Serial Number	Pre Test	Post Test	Retention Test	Level of Students
21	32	46	36	Low Achievers
22	32	45	36	
23	31	46	32	
24	31	44	33	
25	31	40	31	
26	30	38	30	
27	30	37	33	
28	29	36	29	
29	29	35	31	
30	28	35	28	

Marks of Male Students (Experimental Group)

Serial Number	Pre Test	Post Test	Retention Test
1	57	80	74
2	56	79	74
3	53	79	73
4	52	80	74
5	50	78	66
6	48	76	65
7	48	75	63
8	47	72	61
9	47	69	57
10	46	67	57
11	44	63	53
12	43	62	53
13	42	62	52
14	41	63	52
15	39	60	52
16	39	63	51
17	37	61	50
18	36	60	50
19	36	59	51
20	35	57	48
21	33	54	40
22	32	54	40
23	31	52	39
24	31	50	40
25	30	49	37
26	30	45	38
27	30	44	36
28	29	42	36
29	29	41	34
30	27	40	34

**High Achievers, Average Achievers and Low Achievers of Male
Students (Experimental Group)**

Serial Number	Pre Test	Post Test	Retention Test	Level of Students
1	57	80	74	High Achievers
2	56	79	74	
3	53	79	73	
4	52	80	74	
5	50	78	66	
6	48	76	65	
7	48	75	63	
8	47	72	61	
9	47	69	57	
10	46	67	57	

Serial Number	Pre Test	Post Test	Retention Test	Level of Students
11	44	63	53	Average Achievers
12	43	62	53	
13	42	62	52	
14	41	63	52	
15	39	60	52	
16	39	63	51	
17	37	61	50	
18	36	60	50	
19	36	59	51	
20	35	57	48	

Serial Number	Pre Test	Post Test	Retention Test	Level of Students
21	33	54	40	Low Achievers
22	32	54	40	
23	31	52	39	
24	31	50	40	
25	30	49	37	
26	30	45	38	
27	30	44	36	
28	29	42	36	
29	29	41	34	
30	27	40	34	

Appendix D

Marks of Female Students

Marks of Female Students (Control Group)

Serial Number	Pre Test	Post Test	Retention Test
1	60	74	65
2	58	73	64
3	58	72	62
4	57	69	61
5	54	70	59
6	54	68	58
7	52	65	55
8	52	64	55
9	51	66	55
10	50	64	55
11	48	61	53
12	48	60	52
13	46	59	50
14	44	58	50
15	43	59	47
16	43	57	46
17	42	56	44
18	41	55	45
19	40	54	43
20	40	54	42
21	39	50	40
22	39	49	39
23	37	50	40
24	36	49	39
25	35	49	39
26	35	48	39
27	34	46	38
28	33	43	37
29	33	42	36
30	33	41	36

**High Achievers, Average Achievers and Low Achievers of Female
Students (Control Group)**

Serial Number	Pre Test	Post Test	Retention Test	Level of Students
1	60	74	65	High Achievers
2	58	73	64	
3	58	72	62	
4	57	69	61	
5	54	70	59	
6	54	68	58	
7	52	65	55	
8	52	64	55	
9	51	66	55	
10	50	64	55	

Serial Number	Pre Test	Post Test	Retention Test	Level of Students
11	48	61	53	Average Achievers
12	48	60	52	
13	46	59	50	
14	44	58	50	
15	43	59	47	
16	43	57	46	
17	42	56	44	
18	41	55	45	
19	40	54	43	
20	40	54	42	

Serial Number	Pre Test	Post Test	Retention Test	Level of Students
21	39	50	40	Low Achievers
22	39	49	39	
23	37	50	40	
24	36	49	39	
25	35	49	39	
26	35	48	39	
27	34	46	38	
28	33	43	37	
29	33	42	36	
30	33	41	36	

Marks of Female Students (Experimental Group)

Serial Number	Pre Test	Post Test	Retention Test
1	60	84	79
2	59	83	78
3	57	84	78
4	56	83	77
5	55	81	75
6	53	83	75
7	52	81	73
8	52	80	71
9	52	78	72
10	51	75	68
11	49	72	65
12	48	70	65
13	46	71	63
14	44	69	62
15	44	68	62
16	43	65	61
17	41	66	58
18	41	65	57
19	40	65	56
20	40	62	54
21	39	59	51
22	38	58	51
23	37	59	51
24	36	57	50
25	35	58	51
26	35	56	50
27	34	56	49
28	33	55	48
29	33	52	44
30	33	50	43

**High Achievers, Average Achievers and Low Achievers of Female
Students (Experimental Group)**

Serial Number	Pre Test	Post Test	Retention Test	Level of Students
1	60	84	79	High Achievers
2	59	83	78	
3	57	84	78	
4	56	83	77	
5	55	81	75	
6	53	83	75	
7	52	81	73	
8	52	80	71	
9	52	78	72	
10	51	75	68	

Serial Number	Pre Test	Post Test	Retention Test	Level of Students
11	49	72	65	Average Achievers
12	48	70	65	
13	46	71	63	
14	44	69	62	
15	44	68	62	
16	43	65	61	
17	41	66	58	
18	41	65	57	
19	40	65	56	
20	40	62	54	

Serial Number	Pre Test	Post Test	Retention Test	Level of Students
21	39	59	51	Low Achievers
22	38	58	51	
23	37	59	51	
24	36	57	50	
25	35	58	51	
26	35	56	50	
27	34	56	49	
28	33	55	48	
29	33	52	44	
30	33	50	43	

Appendix E

Lesson Plan No.1

The Saviour of Mankind

Lesson Plan No: 1**Topic: The Saviour of Mankind****Class: 9th**

Topics	Subject Matter	Black Board Writing
General Objectives	<p>To enable the students to:</p> <ol style="list-style-type: none"> 1. Listen and comprehend English when spoken 2. Speak English fluently with correct pronunciation. 3. Communicate and express their ideas freely in English. 4. Enjoy the literature in English by developing reading skills. 5. Acquire the vocabulary in English which is enough to help them in use of language. 6. Write English legibly and coherently with correct spelling. 7. Compose freely and independently in speech and writing. 	
Specific Objectives	<p>To enable the students to:</p> <ol style="list-style-type: none"> 1. Know about life of Holy Prophet (S.A.W.W). 2. Know and learn about the mission of the Holy Prophet (S.A.W.W). 3. Learn how Holy Prophet's teachings changed the world 	

A.V. aids:	<p>The instruments of modern teaching, Duster, Board, Chalk, Chart, Text book, Marker, Pencils, Models, Pointers, Pictures</p> <p>Teaching Methods: Flipped Teaching and Traditional Teaching</p> <p>Instructional material: English text book of Punjab Text Book Board, marker, board, A.V. Aids</p> <p>For Flipped Teaching: Use of technology will be used. Students will be given tasks in groups after watching videos. Home work will not be assigned.</p> <p>Previous Knowledge Testing: In order to assess previous knowledge of the students, teacher will ask following questions:</p> <ol style="list-style-type: none"> 1. Who is the last Prophet of ALLAH? 2. Why did ALLAH send the Prophets? 3. What are teachings of Hazrat Muhammad (S.A.W.W)? 	
Announcement of the Topic	<p>The teacher will say, children! Today we shall read about “The savior of Mankind.” And write the topic on the board in Block letters.</p>	The Saviour of Mankind
Presentation	<p>Teacher will read the lesson from text book first, and then will ask students to follow. He</p>	

	<p>will correct the pronunciation and will write difficult words on writing board.</p> <ol style="list-style-type: none"><li>1. The flow of the Divine message which continued for the next twenty-three years and the Holy Prophet (S.A.W.W) had arisen to proclaim ones of God (Touheed) and the unity of Mankind. His mission was to destroy the nexus of superstition, ignorance, and disbelief, set up a noble conception of life and lead mankind to the light of faith and divine bliss.<li>2. Since this belief was threatening their dominance in the society, the pagan Arabs started to mount pressure on the Holy Prophet (S.A.W.W) and his follows. They wanted them to renounce their cause and take to idol worshipping. On one occasion, they sent a delegation to the Holy Prophet's (S.A.W.W) kind and caring uncle, Abu Talib. They told them to restrain the Holy Prophet (S.A.W.W) from preaching ALLAH Almighty's message, or face their enmity. Finding himself in a dilemma, he sent for his nephew, and explained to him the situation. The	
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	<p>Holy Prophet answered with these memorable words:</p> <p>3. “My dear uncle, if they put the sun in my right hand and the moon in my left, even then I shall not abandon the proclamation of the Oneness of God (Tauheed). I shall set up the true faith upon the earth or perish in the attempt.”</p> <p>Teacher will show a chart of words, meanings and will ask the students to write words meanings on note books.</p>			
	Words	Pronunciation	Meanings	
	Flow (n)	فلو	روانی ترس یل	
	Continue (v)	کنٹی نیو	جاری رہنا	
	Proclaim (v)	پرو۔ کلیم	اعلان کرنا	
	Oneness (n)	ون نیس	واحدانیت	
	Unity (n)	یونٹی	اتحاد، یگانگت، وحدت	
	Nexus	نیکسس	کڑی، سلسلہ، رابطہ	
	Superstition (n)	سپر سٹی شن	توہمات پرستی	
	Conception (n)	کون سیپ۔ شن	نظریہ، تصور	

	Bliss (n)	بلس	سرور شادمانی	
	Belief (n)	بی لیف	عقیدہ	
	Threatening (v)	تھریٹ ننگ	پرخطر	
	Dominance (n)	ڈومیننس	غلبہ	
	Pagan (n)	پے گن	کفار	
	Pressure (n)	پرےشر	دباؤ	
	Proclamation (n)	پروکلیمیشن	اعلان	
	Cause (n)	کاز	مقصد	
	Occasion (n)	اوکے یں	موقع	
	Caring (adj)	کیے رنگ	خیال کرنے والا	
	Preach(v)	پریچ	تبلیغ کرنا	
	Face (v)	فیس	سامنا کرنا	
	Enmity	این مٹی	دشمنی	
	Dilemma (n)	ڈلی ما	الجھن	
	Nephew (n)	نیفیو	بھتیجا	
	Situation (n)	سیچوایشن	حالت	
	Abandon (v)	اے بن ڈن	چھوڑنا	
	Set up (v)	سیٹ اپ	قائم کرنا	
	Faith (n)	فیثہ	ایمان	
	Perish	پے رش	ختم ہو جانا۔ برباد ہو جانا	
Recapitulation	<p>In order to assess the learning of students, teacher will ask the following questions.</p> <ol style="list-style-type: none"> 1. Who is the last Prophet of ALLAH Almighty? 2. Where was the Holy Prophet SAWW born? 		<p>Hazrat Muhammad Makkah</p>	

Home Work	<p>3. What was the mission of Holy Prophet SAWW?</p> <p>The teacher will assign them to write meaning of difficult words as homework's task. To enable the students to:</p> <ol style="list-style-type: none"> 1. Listen and comprehend English when spoken. 2. Speak English fluently with correct pronunciation. 3. Communicate and express their ideas freely in English. 4. Enjoy the literature in English by developing reading skills. 5. Acquire the vocabulary in English which is enough to help them in use of language. 6. Write English legibly and coherently with correct spelling. 7. Compose freely and independently in speech and writing. 	To teach humanity. Tolerances Justice.
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For flipped teaching group:

- Selected related video/videos, notes and material will be given to students and there will be no home work assigned to flipped teaching group.
- Home work related tasks will be under guidance of teachers in school.
- Discussions, quizzes, tests and activities related to lesson will be given to flipped teaching group in class.
- If necessary, teacher can also show video to students in class and explain necessary concepts to them.

Daily performance of students will be categorized in three phases that were before class and after class. The teacher of flipped teaching group will be provided printed copies of learning materials for students before starting the formal session.

1. Pre-Class: The extent and duration of videos for flipped group will not be fixed. It will vary from of 5-10 minutes to 60 minutes also including 5-10 slides to 20-30 slides of power point presentation and notes. Therefore DVD and USBs with clear instructions will also handed over to students of flipped classroom before starting

the experiment. The students will watch the video lecture at home or their leisure time and will be pointed out the unclear and puzzling concepts to participate in active learning during classroom.

2. During-Class: The secondary level students of flipped classroom will be engaged in collaborative learning activities like group discussions, think pair & share, critical thinking, presentations, Know Want & Learn, Fish Bowl and concept mapping.
3. Post-Class: In order to engage the learners in post class activities, teacher will assign different tasks like after watching the video the participants will be able to answer the following questions:
 - i. What was the video about?
 - ii. Make a list of ideas you perceived,
 - iii. Most confusing part of the video and
 - iv. Easiest parts of the lesson discussed in video.

On the next day, students will come to the class with ambiguous concepts and teacher will aim to clarify their confusions through classroom discussions and multiple activities or taking guidance from the instructor.

Evaluation of experiment: The performance of students of both groups will be evaluated through posttest immediately after treatment. And after three weeks retention test will be administered.