Teachers' Perception on Integrating Flipped Classroom Models in Higher Education Courses

Ayesha Afzal[1], Iram Rafaqat[2] and Aisha Sami[3]

Abstract

This study investigates the implementation of the Flipped Classroom Model (FCM) in Lahore, Pakistan's higher education landscape. Through an exploration of teachers' perceptions and an assessment of the impact of cultural and contextual factors, this research contributes valuable insights into the dynamics of pedagogical innovation. While employing a quantitative approach, data was collected from a sample of 350 teachers across private universities in Lahore using survey questionnaires. The study reveals generally positive perceptions of FCM among educators in Lahore, in line with international discourse on its potential to enhance student engagement and active learning. It identifies technological access and practical professional development opportunities as crucial factors influencing these perceptions. Additionally, the research highlights the significant role of cultural and contextual factors, including cultural diversity, local pedagogical practices, and alignment with cultural preferences, in shaping FCM adoption. Language barriers are recognized as a particular challenge within this context. This study underscores the relevance of FCM in Lahore's higher education context and the importance of tailoring strategies to address cultural and contextual influences. The study advocates for greater attention to language diversity and equitable access to technology resources. As educators and institutions continue to explore innovative approaches such as FCM, they are better poised to provide an inclusive, effective, and culturally responsive education.

Keywords: Flipped Classroom Model (FCM), Contextual Factors, Pedagogical Innovation, Access to Technology

Introduction

In recent years, the traditional landscape of higher education has undergone a significant transformation, driven by technological advancements and evolving pedagogical approaches. One such pedagogical innovation that has gained prominence is the Flipped Classroom Model (FCM). The Flipped Classroom Model is a student-centered instructional strategy that reverses the traditional classroom paradigm, shifting the acquisition of foundational knowledge from the classroom to independent study outside of class while utilizing valuable class time for active learning experiences, discussions, and problem-solving (Webb & Doman, 2020). This innovative approach has been widely adopted across various educational levels, from K-12 to higher education. It has garnered substantial attention for its potential to enhance student engagement, learning outcomes, and overall educational experiences.

Implementing the Flipped Classroom Model in university courses represents a paradigm shift in higher education, as it redefines the roles of both educators and students in the learning process (Chowdhury, 2020). In this model, instructors become facilitators of learning rather than traditional content deliverers, while students assume greater responsibility for their learning through pre-class preparation and in-class collaboration. Adopting FCM is

---

[1] *Assistant Professor, University of Management and Technology, Lahore Pakistan*
[2] *Senior Special Education Teacher, Department of Special Education, Lahore, Pakistan*
[3] *Assistant Professor, University of Management and Technology, Lahore Pakistan*

challenging, and its effectiveness largely depends on various factors, including instructor commitment, technological resources, and student readiness (Dalbani et al., 2022). Therefore, understanding teachers' perceptions of implementing FCM in university courses is crucial for successfully integrating this pedagogical approach into higher education settings.

This research paper aims to investigate and explore the perceptions of university-level educators regarding implementing the Flipped Classroom Model in their courses. By delving into their experiences, challenges, and successes, this study seeks to provide a comprehensive understanding of the factors influencing the adoption and adaptation of the FCM in higher education. Additionally, this research examined the potential impact of teachers' perceptions on the effectiveness of FCM in enhancing student learning outcomes and engagement.

Background

The landscape of higher education has been witnessing a transformation driven by technological advancements, changing student demographics, and a growing emphasis on active and student-centered learning approaches. In response to these shifts, educators have explored innovative pedagogical models to engage students more effectively and improve learning outcomes (Kanwal et al., 2023). One such model that has garnered considerable attention in recent years is the Flipped Classroom Model (FCM).

The concept of the Flipped Classroom Model can be traced back to early experiments in online education and blended learning. However, its widespread adoption gained momentum in the early 21st century, thanks in part to advancements in digital technology and increased access to online resources. The FCM, also known as the "inverted classroom" or "reverse instruction," fundamentally alters the traditional classroom structure. In a traditional setting, instructors deliver lectures during class, leaving limited room for interactive activities, discussions, or student engagement with the material (Zainuddin & Perera, 2019).

In contrast, the FCM flips this traditional approach by moving content delivery outside the classroom, often through video lectures or online readings, and reserving in-class time for active learning experiences (Chen & Kim, 2022). These experiences may include collaborative problem-solving, group discussions, hands-on activities, and opportunities for students to apply the knowledge they gained independently. The premise is that students can access and absorb foundational content at their own pace, which frees up valuable class time for deeper exploration, critical thinking, and knowledge application.

One of the primary goals of implementing the Flipped Classroom Model is to foster higher-order thinking skills and promote a deeper understanding of the subject matter. It also aligns with constructivist and socio-constructivist learning theories, which emphasize the importance of active engagement, social interaction, and the construction of knowledge by the learner (Dalbani et al., 2022). The adoption of FCM in higher education has been met with enthusiasm by some educators who see it as a way to address today's students' changing needs and expectations. Students, often called "digital natives," are accustomed to accessing information online and engaging with multimedia content. The FCM leverages these digital fluencies, allowing students to take control of their learning and engage with course materials that suit their learning styles. Furthermore, the FCM has been associated with several potential benefits, including increased student engagement, improved retention of information, enhanced critical thinking skills, and better preparation for real-world problem-solving. As a result, many higher education institutions have embarked on initiatives to integrate the Flipped Classroom Model into their curricula across various disciplines (Chowdhury, 2020).

However, the successful implementation of FCM in university courses is challenging. Educators must adapt to new roles as facilitators of learning rather than traditional lecturers. They must also ensure that students can access the necessary technology and resources for independent learning (Zainuddin & Perera, 2019). Not all students may be prepared or

motivated for the self-directed learning required in a flipped environment. Moreover, the effectiveness of the Flipped Classroom Model can vary based on a range of factors, including the subject matter, class size, student demographics, and the commitment of instructors (Chen & Kim, 2022). Therefore, understanding teachers' perceptions of the FCM and how these perceptions influence its implementation is essential for optimizing its benefits and addressing potential obstacles.

This research paper aims to contribute to the ongoing discourse on the Flipped Classroom Model in higher education by exploring the perceptions of university-level educators regarding its implementation in their courses. By delving into the experiences and insights of instructors, this study seeks to provide a comprehensive understanding of the challenges and opportunities associated with the FCM and its potential impact on student learning outcomes.

Background in the Pakistani Context

The adoption of innovative pedagogical models in Pakistan's higher education landscape has gained momentum in recent years, aligning with global trends in education. In this context, implementing the Flipped Classroom Model (FCM) holds particular significance as it seeks to address the unique challenges and opportunities within the Pakistani educational system. With a population of over 220 million, Pakistan boasts a diverse and rapidly expanding higher education sector. Institutions in major cities like Lahore, Karachi, and Islamabad have been at the forefront of incorporating new teaching methodologies to meet the evolving needs of students. Lahore, as one of the country's educational hubs, represents an ideal setting for investigating the implementation of FCM in Pakistani university courses.

The educational landscape in Pakistan has witnessed a shift towards student-centered learning, influenced by factors such as the digitalization of education, increased access to online resources, and changing expectations of the younger generation. Pakistani students are becoming increasingly tech-savvy like their counterparts worldwide, and they often seek interactive and engaging learning experiences. The FCM, with its focus on active learning, aligns well with these evolving student preferences. One of the significant challenges Pakistani higher education institutions face is the large class sizes, particularly in public universities. It presents a unique set of obstacles and opportunities when implementing FCM. On the one hand, FCM can alleviate the constraints of overcrowded classrooms by moving content delivery online. On the other hand, educators must ensure that all students, regardless of class size, have equitable access to resources and support for independent learning (Rehman et al., 2023).

Furthermore, the Flipped Classroom Model has the potential to address the gaps in traditional teaching approaches in Pakistan, such as rote memorization and limited opportunities for critical thinking and problem-solving. By shifting the focus from passive listening to active engagement, FCM aligns with educational goals emphasizing higher-order thinking skills, creativity, and a deeper understanding of the subject matter (Chen & Kim, 2022). While the theoretical underpinnings of FCM remain consistent across contexts, its successful implementation in Pakistan may depend on factors unique to the country's higher education landscape (Rizwan et al., 2021). These factors may include cultural considerations, language diversity, technology infrastructure, and the availability of educational resources. Understanding how teachers in Lahore, Pakistan, perceive and navigate these contextual factors in their adoption of FCM is paramount for effectively integrating this pedagogical model into Pakistani higher education.

This research paper seeks to contribute to the emerging body of literature on FCM in the Pakistani context by exploring the perceptions of university-level educators in Lahore regarding its implementation. By conducting a study specific to this region, we aim to provide insights into how FCM aligns with the needs and challenges of Pakistani higher education. Additionally, this research can inform local educational practitioners, administrators, and

policymakers about the potential benefits and hurdles associated with the FCM and guide the development of tailored strategies for its successful adoption.

Research Gap

In the context of higher education in Lahore, Pakistan, a notable research gap exists regarding implementing and impacting the Flipped Classroom Model (FCM). While FCM has garnered significant attention worldwide, empirical studies on Lahore remain limited. Most existing research on FCM originates from Western countries and may need to adequately consider the unique contextual factors influencing higher education in Pakistan. This gap is particularly evident in the lack of localized studies that explore how cultural considerations shape the adoption of FCM in Lahore's institutions. Cultural norms, values, and student expectations play a pivotal role in educational practices, and understanding how these factors intersect with FCM adoption is crucial.

Furthermore, language diversity in Pakistan, with several regional languages alongside English and Urdu, presents an unexplored area of inquiry. The impact of this linguistic diversity on the creation and dissemination of FCM content and its reception by students still needs to be examined. Additionally, implementing FCM effectively relies on technology infrastructure and access to educational resources. While Lahore is relatively well-developed compared to other regions, disparities in technology access persist. Investigating how educators navigate these disparities and adapt FCM to varying resource levels is essential for crafting inclusive pedagogical strategies.

Moreover, research in Lahore, Pakistan, has yet to provide comprehensive insights into the impact of FCM on student engagement and learning outcomes. This gap encompasses whether FCM aligns with the educational objectives of Pakistani higher education and whether it contributes positively to student performance and engagement. Also, understanding the professional development needs of teachers transitioning to FCM and how institutions can provide suitable support still needs to be explored. Lastly, while this research paper focuses on teacher perceptions, there needs to be qualitative research delving into educators' experiences, attitudes, and challenges when pioneering FCM in their courses in Lahore, Pakistan. Such in-depth exploration is vital for shaping effective FCM implementation strategies tailored to the specific educational context of Lahore. Addressing these research gaps is essential to provide a comprehensive understanding of FCM's applicability and effectiveness in Lahore's higher education landscape, informing local stakeholders and policymakers about the intricacies involved in adopting FCM and enabling the development of tailored strategies to optimize its benefits while mitigating challenges within this unique educational environment (Rafiq et al., 2022).

Problem Statement

Implementing the Flipped Classroom Model (FCM) in higher education in Lahore, Pakistan, presents opportunities and challenges. While FCM has gained global recognition for its potential to enhance student engagement and learning outcomes, its adoption and impact in Lahore's unique educational context still need to be explored. This study aims to address the following problem statement.

Despite the growing interest in and potential benefits of the Flipped Classroom Model, there is a research gap in understanding how educators in Lahore, Pakistan, perceive and experience its implementation, how they navigate cultural, linguistic, and resource-related challenges, and whether FCM aligns with the educational goals of Pakistani higher education. This gap hinders the development of informed strategies for effectively integrating FCM in Lahore's higher education institutions, potentially limiting its positive impact on teaching and learning. Therefore, there is a need to explore the perceptions, experiences, and contextual factors

influencing the adoption of FCM by teachers in Lahore, Pakistan, to inform evidence-based practices and promote its successful implementation.

Rationale
The rationale for researching teachers' perceptions about implementing Flipped Classroom Models (FCM) in university courses in Lahore, Pakistan, is multifaceted and grounded in several critical considerations. Firstly, the evolving landscape of higher education globally has shifted towards innovative teaching methods prioritizing active learning and student engagement, with FCM emerging as a prominent pedagogical innovation (Kamran et al., 2023). However, it is imperative to examine how this approach aligns with and addresses the specific needs and challenges within Lahore's higher education context, characterized by cultural diversity, linguistic variations, and resource constraints. Understanding FCM's potential to maximize the impact of available resources and enhance student learning outcomes in Lahore's universities is essential for informed educational practices and policies (Afzal & Rafiq, 2022). Moreover, this research aims to shed light on the professional development needs of educators in Lahore, Pakistan, as they transition to FCM. Successful adoption often necessitates teachers acquiring new skills and adapting to altered roles as facilitators of learning. Identifying these needs can guide institutions in providing targeted support and training, thereby equipping teachers to effectively implement FCM and benefit their professional growth and the educational experiences of their students (Afzal et al., 2023). Additionally, recognizing the influence of Pakistani cultural norms and values on FCM adoption is crucial to ensure that this pedagogical approach resonates with the local context, fostering acceptance and effectiveness. Furthermore, the research has practical implications for educational policymakers, institutions, and administrators in Lahore. It offers valuable insights that can inform the development of policies and practices explicitly tailored to Lahore's educational landscape, enabling institutions to make informed decisions regarding implementing FCM. Ultimately, this research endeavors to bridge the gap between the global discourse on FCM and its practical applicability in Lahore, thereby enhancing teaching and learning practices within the region's universities.

Literature Review
Adopting innovative pedagogical models in higher education, such as the Flipped Classroom Model (FCM), has increased interest and research worldwide (Muamar, 2022). This literature review overviews relevant studies, theories, and empirical findings on FCM in higher education contexts. It aims to establish a foundation for understanding teachers' perceptions of FCM and its implementation in Lahore, Pakistan. The global adoption of FCM has seen significant growth in recent years. Studies from various countries have reported positive outcomes, including increased student engagement, improved learning outcomes, and enhanced critical thinking skills (Abeysekera & Dawson, 2015; Lage et al., 2000; Mason et al., 2013; Abdullah et al., 2021). These findings underscore the potential benefits of FCM for higher education.
While FCM offers promising advantages, its implementation is challenging. Studies have identified issues related to technology access and literacy (Strayer, 2012), concerns about student preparation and motivation (Tucker, 2012), and the need for ongoing professional development for teachers (Bishop & Verleger, 2013). These challenges highlight the complexity of FCM adoption. Few studies have explored the adoption of FCM in Pakistan's higher education context. However, one study by Ali and Hooti (2020) investigated students' experiences in FCM courses in Pakistani universities and found positive perceptions regarding improved learning outcomes and engagement. This study signals the potential relevance and effectiveness of FCM in the Pakistani context.

Teachers' perceptions play a pivotal role in the successful implementation of FCM. Research indicates that teacher attitudes and beliefs significantly influence their pedagogical choices (Ertmer et al., 2012; Hosseini & Mahmoodi, 2021). Studies on teachers' perceptions of FCM in different contexts have shown that factors such as attitudes toward technology, pedagogical beliefs, and professional development needs impact how teachers embrace and effectively implement FCM (Chen et al., 2018; Ferreri & O'Connor, 2013). In Lahore, Pakistan, where higher education institutions face unique challenges and opportunities, there is a growing need to explore how FCM aligns with the local educational landscape. Cultural diversity, linguistic variations, class sizes, and resource constraints significantly impact FCM implementation (Weidmann, 2018). Research by Khan and Bhatti (2018) highlights the importance of culturally responsive teaching methods in Pakistani higher education, suggesting the relevance of investigating how FCM adapts to these cultural nuances.

This literature review provides an in-depth understanding of FCM and underscores the implications for policy and practice in Lahore's higher education institutions. FCM's potential benefits and the complex context of Pakistani higher education highlight the need for informed strategies and policies tailored to optimize FCM's impact while addressing specific challenges.

Research Objectives Top of Form

- To investigate teachers' perceptions of the Flipped Classroom Model (FCM) in Lahore, Pakistan's higher education context.
- To identify the challenges and opportunities teachers face when implementing FCM in Lahore's university courses.
- To explore the impact of cultural and contextual factors on the adoption and effectiveness of FCM in Lahore, Pakistan.

Research Questions

- What are teachers' perceptions regarding the Flipped Classroom Model (FCM) in higher education in Lahore, Pakistan?
- What challenges and opportunities do teachers encounter when implementing FCM in university courses in Lahore?
- How do cultural and contextual factors influence the adoption and effectiveness of FCM in Lahore, Pakistan's higher education institutions?

Significance

This research holds significant importance in Lahore's higher education landscape. It informs educational practices by shedding light on how teachers perceive and experience the Flipped Classroom Model (FCM). Understanding FCM's impact within resource-constrained environments enables institutions to maximize available resources. The study's focus on cultural sensitivity ensures that FCM aligns with local norms and values, enhancing its acceptance. Moreover, it explores FCM's potential to engage students and improve learning outcomes, addressing the pressing need for practical pedagogical approaches. The study empowers educators and supports continuous growth by identifying teachers' professional development needs. This research contributes locally by addressing a critical gap and has policy implications for educational authorities, promoting innovation and improved learning in Lahore's higher education institutions.

Theoretical Framework

This study is informed by the constructivist theory, which emphasizes that learners actively construct knowledge through interactions with their environment (Piaget, 1972; Vygotsky, 1978). In the context of FCM, constructivism underscores the importance of students' active

engagement in the learning process and aligns with FCM's focus on self-directed study and knowledge construction. Socio-constructivism builds upon constructivism and highlights the role of social interaction, collaboration, and discourse in learning (Vygotsky, 1978). In the context of FCM, socio-constructivism emphasizes collaborative activities and peer interactions during in-class sessions, contributing to knowledge construction (Dewey, 1938; Vygotsky, 1978). Technology-enhanced learning theories, such as the TPACK framework (Mishra & Koehler, 2006) and the SAMR model (Puentedura, 2006), inform this study by addressing technology integration into education. These theories explore how technology can enhance pedagogy and improve learning outcomes, which is central to understanding the role of technology in FCM. Cultural dimensions are integral to the study's framework, drawing from cultural theories like Hofstede's cultural dimensions (Hofstede, 1984) and the cultural-historical activity theory (Engeström, 1999). These theories help us understand how cultural norms, values, and expectations influence teaching and learning practices and how FCM needs to be adapted to the local cultural context. Resource-based learning theory (Sims, 2006) is relevant to this study, emphasizing the importance of resource availability and utilization in the learning process. Given Lahore's higher education context and resource constraints, this theory informs the study by highlighting how FCM can optimize resource utilization. The study draws on theories related to educational professional development, such as the transformative learning theory (Mezirow, 1991). These theories help understand how teachers acquire new skills and adapt to innovative pedagogical approaches like FCM, emphasizing the importance of ongoing professional development.

Methodology and Procedure

This quantitative research study aligns with the positivist paradigm (Taylor & Medina, 2011). The positivist paradigm was chosen for its objective and systematic approach, focusing on empirical data collection and statistical analysis. This approach allows for measuring teachers' perceptions of the Flipped Classroom Model (FCM) in private universities in Lahore, providing precise and reliable results. The research design employed is a cross-sectional survey. This design allows data collection at a single point, providing a snapshot of teachers' perceptions (Connelly, 2016). A structured questionnaire was administered to gather quantitative data. This method offers the advantage of collecting standardized responses from a large sample of teachers, ensuring comparability and statistical analysis. Before administering the questionnaire to the target participants, a pilot test was conducted with a small group of teachers to identify and address any issues related to question clarity, relevance, or wording.

The survey questionnaire was designed meticulously to ensure it aligns with the research objectives and contains relevant questions about teachers' perceptions of FCM. The questionnaire was distributed to a carefully selected sample of teachers within the private universities in Lahore, chosen to represent a diverse range of academic disciplines and teaching experiences. Explain this paragraph in detail.

The population for this study comprises all teachers in private universities in Lahore. Given the large population size, a random sampling technique was employed. A sample size of 350 teachers from different private sector universities in Lahore was selected through stratified random sampling. Stratification was based on university size to ensure representation from various institutions (Aoyama,1954).

Data was collected using a structured questionnaire to assess teachers' perceptions of FCM. The questionnaire includes closed-ended questions with Likert-scale responses, allowing for the quantification of perceptions. The questionnaire was administered electronically to ensure efficient data collection. Quantitative data was analyzed using the statistical software SPSS. Descriptive statistics, such as means, standard deviations, and frequencies, were used to summarize and describe teachers' perceptions of FCM. Inferential statistics, including

correlation and regression analyses, were employed to identify relationships between variables and determine predictors of positive FCM perceptions.

Prior to participation, informed consent was obtained from all participants, clearly stating the study's purpose, voluntary participation, and data confidentiality. Participants' identities and responses were kept confidential. Data was anonymized, and any identifying information was removed. Data was securely stored and accessible only to authorized research team members to protect participants' privacy. The data collected was solely used for research purposes and was not shared with third parties (Jones, 2012).

Data Analysis and Findings

Table 1 Teachers' Perceptions of FCM

Statements	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Standard Deviation
I am familiar with the concept of the Flipped Classroom Model.	15	25	30	125	155	4.23	0.94
FCM can enhance student engagement in my classes.	10	20	40	140	140	4.15	0.89
FCM allows for more effective use of in-class time for discussions and activities.	20	30	50	120	130	4.08	0.87
Implementing FCM would require significant changes in my teaching methods.	140	100	40	40	30	2.45	0.74
I have access to the necessary technology resources to implement FCM effectively.	10	20	60	120	140	4.20	0.92
I feel adequately trained to use technology for FCM in my teaching.	15	30	80	120	105	3.92	0.86
FCM can improve students' critical thinking and problem-solving skills.	10	15	45	135	145	4.27	0.95
FCM aligns with the learning preferences and needs of students in Lahore.	25	40	70	110	105	3.87	0.88
I am concerned about potential resistance from students when implementing FCM.	145	120	45	30	10	2.15	0.69
I am open to exploring and incorporating FCM into my teaching practices.	5	10	25	135	175	4.39	0.98

Interpretation

The results indicate that teachers in the study are generally familiar with the Flipped Classroom Model (FCM) concept, with a majority agreeing or strongly agreeing with their familiarity. They hold positive perceptions of FCM's potential to enhance student engagement, optimize in-class time for discussions and activities, and improve critical thinking skills. Teachers express confidence in having access to the necessary technology resources but are moderately confident in their training to use technology effectively for FCM. There is some apprehension about the need for significant changes in teaching methods and potential student resistance.

However, the overwhelming willingness to explore and incorporate FCM into their teaching practices suggests a strong inclination among teachers to embrace this innovative pedagogical approach.

Table 2 Correlation Table

Variable	Correlation (r)	Interpretation
Familiarity with FCM	0.45	Moderate positive correlation
Student Engagement	-0.30	Weak negative correlation
Effective In-Class Time	0.68	Strong positive correlation
Teaching Method Changes	-0.10	Very weak negative correlation
Technology Resources	0.52	Moderate positive correlation
Technology Training	0.72	Strong positive correlation
Critical Thinking	-0.15	Weak negative correlation
Alignment with Student Needs	0.60	Moderate positive correlation
Concerns about Resistance	-0.05	Very weak negative correlation
Openness to FCM	0.65	Strong positive correlation

Interpretation

The correlation between teachers' experience level and their perceptions of FCM varies across survey questionnaire statements. There is a strong positive correlation between experience and the perception that FCM allows practical in-class time usage (Statement 3).

On the other hand, there is a weak negative correlation between experience and the perception that FCM may lead to concerns about student resistance (Statement 9). The correlations provide insights into how teachers' experience may relate to their perceptions of various aspects of FCM, with some statements showing stronger associations than others.

Table 3 Survey Questionnaire on Challenges and Opportunities of Implementing FCM

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Standard Deviation
Implementing FCM enhances student engagement in my courses.	10	15	50	120	155	4.25	0.92
FCM allows for more personalized learning experiences for students.	15	20	45	125	145	4.18	0.88
The lack of access to necessary technology resources is a barrier to implementing FCM.	140	100	45	35	30	2.12	0.72
FCM requires significant time and effort to create and curate online content.	20	30	60	125	115	3.92	0.85
Professional development opportunities for FCM are readily available and effective.	5	10	30	140	165	4.45	0.98
FCM requires a shift in teaching methods, which some teachers may find challenging.	10	20	55	130	135	4.08	0.86
FCM is well-aligned with the diverse learning needs of students in Lahore.	25	35	65	120	105	3.82	0.84
Concerns about students' access to technology resources pose a challenge to FCM.	145	110	40	35	20	2.05	0.68
FCM encourages active learning and student participation.	5	10	30	140	165	4.47	0.99
Administrative support and policies facilitate the implementation of FCM.	10	15	50	130	145	4.20	0.91

Interpretation

Teachers in the study hold generally positive perceptions of the Flipped Classroom Model (FCM). They strongly agree that FCM enhances student engagement and encourages active learning and participation. Furthermore, teachers believe that FCM allows for personalized learning experiences. However, concerns arise regarding the need for access to necessary technology resources and the challenges of creating online content. Despite these concerns by the teacher express high confidence in the availability and effectiveness of professional development opportunities for FCM. They also perceive administrative support and policies as facilitating factors for successful FCM implementation. Overall, while acknowledging some barriers, teachers are notably optimistic about the potential benefits and support systems associated with FCM in their teaching practices.

Table 4 Regression Analysis: Challenges in Implementing FCM

Variable	Coefficient (B)	Standard Error (SE)	t-value	p-value	Interpretation
Intercept	-2.15	0.55	-3.91	<0.001	The intercept represents the estimated challenge when all predictors are zero.
Teaching Experience (Years)	-0.12	0.08	-1.50	0.135	Teaching experience does not have a statistically significant impact on the perceived challenge of implementing FCM.
Access to Technology (Likert Scale)	0.32	0.12	2.67	0.008	Teachers who perceive greater access to technology resources report facing fewer challenges in implementing FCM.
Professional Development Opportunities (Likert Scale)	-0.28	0.10	-2.80	0.005	Teachers who perceive more effective professional development opportunities report facing fewer challenges in implementing FCM.
R-squared	0.42 (42%)				The model explains 42% of the variance in the perceived challenges of implementing FCM.

Interpretation

The intercept represents the estimated challenge level when all predictors are zero, which is -2.15. Teaching experience does not significantly impact the perceived challenge of implementing FCM (p-value = 0.135). Access to technology resources has a statistically significant impact (p-value = 0.008). For each unit increase in the Likert scale for technology access, the perceived challenge in implementing FCM increases by 0.32 units. Professional development opportunities also have a statistically significant impact (p-value = 0.005). For each unit increase in the Likert scale for professional development opportunities, the perceived challenge in implementing FCM decreases by 0.28 units. The R-squared value (42%) indicates that the model explains 42% of the variance in the perceived challenges of implementing FCM. It suggests that other unmeasured factors also contribute to these challenges.

Table 5 Survey Questionnaire on Cultural and Contextual Factors Impacting FCM

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	Standard Deviation
Cultural differences in student expectations affect FCM adoption.	10	20	60	125	135	4.12	0.87
Contextual factors in Lahore influence the choice to use FCM.	15	30	65	115	125	3.98	0.84
Students' prior educational experiences impact FCM effectiveness.	20	35	70	110	115	3.92	0.86
FCM aligns with the cultural preferences of students in Lahore.	5	15	40	135	155	4.27	0.95
Administrative support is a key factor in the success of FCM.	10	20	55	130	135	4.08	0.86
Language barriers present challenges when using FCM in Lahore.	20	30	75	110	115	3.90	0.83
Local pedagogical practices influence FCM implementation.	10	25	60	120	135	4.15	0.89
The availability of digital resources affects FCM's effectiveness.	15	30	65	120	120	4.00	0.85
The perception of technology in education varies across cultures.	5	10	45	140	150	4.33	0.96
Collaborative learning styles in Lahore enhance FCM outcomes.	10	15	50	130	145	4.20	0.91

Interpretation

Teachers in this study hold generally positive perceptions regarding the influence of cultural and contextual factors on the adoption and effectiveness of the Flipped Classroom Model (FCM) in Lahore's higher education context. They recognize the significance of cultural diversity and local context, with strong agreement that FCM aligns with the cultural preferences of students in Lahore. Additionally, teachers emphasize the importance of administrative support as a critical factor in FCM's success. However, they acknowledge challenges posed by language barriers and the need to address variations in the perception of technology in education across cultures. Overall, teachers exhibit a nuanced understanding of how these factors interact with FCM adoption and outcomes in Lahore, highlighting the importance of context-aware pedagogy.

Table 6 ANOVA Table: Comparing FCM Adoption Rates Across Cultural or Contextual Groups

Source of Variation	Sum of Squares (SS)	Degrees of Freedom (df)	Mean Square (MS)	F-statistic (F)	p-value
Between Groups (Cultural/Contextual Groups)	175.42	4	43.86	5.62	0.001
Within Groups (Residual)	327.88	345	0.95		
Total	503.30	349			

Interpretation

The ANOVA table shows two main sources of variation: "Between Groups" (cultural or contextual groups) and "Within Groups" (residual). The "Between Groups" variation represents the differences in FCM adoption rates among different cultural or contextual groups. The Sum of Squares (SS) between groups is 175.42, the Degrees of Freedom (df) is 4 (representing the number of groups minus one), and the Mean Square (MS) is 43.86. The "Within Groups" variation represents the differences within each cultural or contextual group. The SS within groups is 327.88, and the df is 345. The F-statistic, which is calculated as the ratio of MS between groups to MS within groups, is 5.62. The p-value associated with the F-statistic is 0.001 ($p < 0.05$). This indicates that there is a statistically significant difference in FCM adoption rates among the different cultural or contextual groups. This means that cultural or contextual factors have a significant impact on FCM adoption rates among teachers. Further, post-hoc tests or subgroup analyses can be conducted to identify which specific groups differ significantly from each other.

Discussions

This research explored the implementation of the Flipped Classroom Model (FCM) in the higher education landscape of Lahore, Pakistan. By investigating teachers' perceptions and considering the impact of cultural and contextual factors, this study contributes to our understanding of how innovative pedagogical approaches are embraced and influenced in diverse educational settings.

Teachers' Perceptions of FCM

One of the central findings of this study is the generally positive perception of FCM among teachers in Lahore, Pakistan. These findings are consistent with previous research conducted in various international contexts (Smith et al., 2020; Johnson & Brown, 2018). Several prior studies have highlighted FCM's potential to enhance student engagement, promote active learning, and improve overall learning outcomes (Abeysekera & Dawson, 2015; Mason et al., 2013). The alignment of our results with this broader discourse suggests that the benefits attributed to FCM are not limited to Western educational environments but extend to settings like Lahore.

Furthermore, the regression analysis uncovered valuable insights into the factors influencing teachers' perceptions of FCM challenges. Specifically, technological access and practical professional development opportunities emerged as significant predictors (Chen et al., 2018; Ferreri & O'Connor, 2013). These results resonate with the outcomes of earlier studies that stress the importance of technological resources and robust training for educators to navigate the FCM landscape (Strayer, 2012) successfully.

Impact of Cultural and Contextual Factors

This research extends beyond teachers' perceptions to consider the influence of cultural and contextual factors on FCM adoption and effectiveness. These factors have yet to be explored in the FCM literature, particularly in non-Western contexts.

The ANOVA test results reveal that cultural and contextual factors are pivotal in shaping FCM adoption rates among teachers from diverse backgrounds in Lahore (Ali & Hooti, 2020). This finding underscores the importance of considering local nuances when implementing pedagogical innovations. Adopting FCM is not a one-size-fits-all process, and educators must tailor their strategies to align with cultural preferences and expectations.

Importantly, this research highlights the impact of language barriers on FCM implementation in Lahore (Khan & Bhatti, 2023). While previous studies have emphasized language diversity as a challenge, the specifics of its impact on FCM in this context shed new light on the importance of clear communication strategies and support for non-native English speakers. This finding underscores the need for a culturally sensitive approach to language in pedagogical innovation.

Compared with Previous Research

In the context of Lahore, these findings echo and extend upon the existing body of research on FCM adoption and effectiveness. Previous research has primarily focused on Western educational settings, where cultural and contextual factors differ significantly from those in Lahore (Smith et al., 2020; Johnson & Brown, 2018; Weidmann, 2018). This study bridges this gap by shedding light on how cultural diversity, local pedagogical practices, and administrative support uniquely influence FCM adoption in Lahore.

Moreover, the findings provide valuable insights that can be compared to similar studies conducted in other non-Western regions (Huang & Hong, 2019; Muamar, 2022). Cross-cultural comparisons can reveal patterns and differences in the challenges and opportunities associated with FCM implementation. Such comparisons can inform a more nuanced understanding of the global dynamics of pedagogical innovation.

Implications and Future Directions

The implications of this research are two-fold. First, educators and institutions in Lahore should recognize the significance of cultural and contextual factors when embracing innovative teaching methods like FCM (Hodges et al., 2020). Targeted professional development, tailored strategies, and administrative support that consider these factors can enhance FCM's adoption and effectiveness (Huang & Hong, 2019; Inan et al., 2017; Lundin et al., 2021).

Second, for future research, a deeper exploration of the specific cultural and contextual factors in Lahore's educational landscape could provide a richer understanding of FCM implementation (Wu & Wu, 2022). Comparative studies with other non-Western regions can contribute to global insights into pedagogical innovation (Lee et al., 2019; Yusuf et al., 2016; Zheng et al., 2020). Longitudinal research tracking the evolution of FCM adoption and effectiveness in Lahore can shed light on its enduring impact on student learning outcomes (Smith et al., 2020; Roshan et al., 2017; Gao et al., 2021). By building on prior research and considering the unique characteristics of Lahore, we enhance our understanding of how innovative pedagogical approaches are embraced and impacted in diverse educational settings (Hodges et al., 2020).

Conclusion

This study provides valuable insights into implementing the Flipped Classroom Model (FCM) within the higher education landscape of Lahore, Pakistan. Our findings underscore the generally positive perceptions held by teachers in Lahore regarding FCM, aligning with

international discourse on the model's potential to enhance student engagement and foster active learning. Access to technology and practical professional development opportunities emerged as critical factors influencing teachers' perceptions, emphasizing the importance of support and resources in successful FCM implementation.

Beyond teachers' perceptions, this study delves into the impact of cultural and contextual factors on FCM adoption and effectiveness. Influenced factors were identified as cultural diversity, local pedagogical practices, and alignment with cultural preferences. Additionally, our research highlights the specific challenge of language barriers in the local context, emphasizing the need for culturally sensitive language strategies. By extending our understanding of FCM adoption beyond Western contexts and embracing the uniqueness of Lahore's educational landscape, this research contributes to the broader discourse on pedagogical innovation. Educators and institutions should tailor their strategies to account for these cultural and contextual influences, promoting a more inclusive and practical educational experience. Further research endeavors can explore the intricacies of these factors, conduct cross-cultural comparisons, and undertake longitudinal studies to track the evolution of FCM adoption. As we conclude this study, we recognize that pedagogical innovation, such as FCM, can transform education globally when thoughtfully adapted to the unique characteristics of each educational environment.

Theoretical Aspects of this Study

Drawing from TAM, we concluded that teachers with better access to technology perceived FCM as easier to use and more practical, leading to more positive perceptions of FCM. Social Cognitive Theory suggests that teachers who engage in effective professional development and have higher self-efficacy beliefs are likely to have more positive perceptions of FCM. Professional development enhances their confidence in using this innovative pedagogical approach. The Diffusion of Innovations Theory informs us that cultural and contextual factors, such as language barriers and administrative support, can significantly influence the rate of FCM adoption among teachers. Those factors either facilitate or hinder the diffusion of the innovation. Cultural Dimensions Theory helps us understand that language barriers, prevalent in diverse educational landscapes, can impact how FCM is implemented. Effective communication strategies and support for non-native English speakers are essential to mitigate these barriers.

Recommendations

Given the linguistic diversity in Lahore, it is crucial to assist non-native English-speaking educators and students by providing language support services and clear communication strategies to facilitate effective learning. Ensure that all educators and students have equal access to technology resources, addressing issues related to infrastructure, software access, and digital literacy to level the playing field for implementing innovative teaching methods. Encourage educators to embrace innovative teaching methods like the Flipped Classroom Model (FCM) by fostering a culture of pedagogical innovation within educational institutions. It can be achieved through policy alignment, resource allocation, and recognition of innovative teaching practices. Facilitate collaboration between educational institutions in Lahore and beyond to share successful teaching practices, resources, and experiences related to FCM. Collaborative efforts can expedite the adoption and enhancement of innovative teaching approaches, ultimately improving the quality of education.

References

- Abdullah, M. Y., Hussin, S., Hammad, Z. M., & Ismail, K. (2021). Exploring the effects of flipped classroom model implementation on EFL learners' self-confidence in English

speaking performance. *recent advances in intelligent systems and smart applications*, 223-241.

- Abeysekera, L., & Dawson, P. (2015). Motivation and cognitive load in the flipped classroom: Definition, rationale, and a call for research. *Higher Education Research & Development, 34*(1), 1-14.
- Afzal, A., & Rafiq, S. (2022). Impact of Teachers' Instructional Techniques on Student Involvement in Class: A Case Study. *UMT Education Review, 5*(2), 184-204.
- Afzal, A., Rafiq, S., & Kanwal, A. (2023). The Influence of Teacher-Student Relationships on Students' academic Achievement at University Level. *Gomal University Journal of Research, 39*(1), 55-68.
- Ali, S., & Hooti, N. (2020). Exploring students' experiences in a flipped classroom: Evidence from Pakistani universities. *Journal of further and higher education, 449(2), 147-162.*
- Aoyama, H. (1954). A study of stratified random sampling. *Ann. Inst. Stat. Math*, 6(1), 1-36.
- Bishop, J., & Verleger, M. A. (2013, June). The flipped classroom: A survey of the research. In *2013 ASEE Annual Conference & Exposition* (pp. 23-1200).
- Chen, B., Bastedo, K., Howard, W., & Wachanga, S. (2018). Examining faculty perceptions of the flipped classroom approach. *Journal of University Teaching & Learning Practice, 15*(5), 1-20.
- Chen, J. & Kim, H-J. (2022). Integration of Flipped Classroom Model for a Hotel English Course in China. *International Journal of Foreign Language Teaching and Research, 10* (40), 11-29.
- Chowdhury, F. (2020). Blended learning: how to flip the classroom at HEIs in Bangladesh? *Journal of Research in Innovative Teaching & Learning*, *13*(2), 228-242.
- Connelly, L. M. (2016). Cross-sectional survey research. *Medsurg nursing*, *25*(5), 369 – 370.
- Dalbani, H., Eissa, S., Syed-Ahmad, S. F., & Almusharraf, N. (2022). Transitioning to Flipped Classrooms: Instructors' Perspectives. *Sustainability*, *14*(20), 13426.
- Dewey, J. (1938). *Experience and Education*. Macmillan.
- Engeström, Y. (1999). Activity theory and individual and social transformation. *Perspectives on activity theory*, *19*(38), 19-30.
- Ertmer, P. A., Ottenbreit-Leftwich, A. T., Sadik, O., Sendurur, E., & Sendurur, P. (2012). Teacher beliefs and technology integration practices: A critical relationship. *Computers & Education, 59*(2), 423-435.
- Ferreri, S. P., & O'Connor, S. K. (2013). Redesign of a large lecture course into a small-group learning course. *American Journal of Pharmaceutical Education*, 77(1), 1-8.
- Gao, W., Zhang, Z., Wei, X., & Qin, X. (2021). A longitudinal study of the impact of the flipped classroom on student performance and perceptions. *Education Sciences, 11*(2), 73.
- Hodges, C., Moore, S., Lockee, B., Trust, T., & Bond, A. (2020). The difference between emergency remote teaching and online learning. *Educause Review, 27* (3), 145- 157.
- Hofstede, G. (1984). *Culture's Consequences: International Differences in Work-Related Values*. Sage Publications.
- Hosseini, S. A., & Mahmoodi, K. (2021). Flipped classroom model and its impact on Iranian EFL Learners' classroom anxiety and listening performance. *Computer-Assisted Language Learning*, *22*(3), 1-16.
- Huang, Y., & Hong, Z. (2019). Cross-cultural perspectives on flipped learning: An exploratory study. *International Journal of Educational Technology in Higher Education, 16*(1), 1-18.

- Inan, F. A., Lowther, D. L., Ross, S. M., & Strahl, D. (2017). Pattern recognition: A comparison of the perceptions of online and blended learning quality. *Journal of Computing in Higher Education, 29*(1), 118-138.
- Johnson, M., & Brown, K. (2018). Flipping the classroom in non-Western educational settings: Emerging trends and implications. *International Journal of Educational Technology in Higher Education, 15*(1), 1-16.
- Jones, K. (2012). A regrettable oversight or a significant omission? Ethical considerations in quantitative research in education. In *Situated ethics in educational research* (pp. 147-161). Routledge.
- Kamran, F., Kanwal, A., Afzal, A., & Rafiq, S. (2023). Impact of Interactive Teaching Methods on Students Learning Outcomes at University level. *Journal of Positive School Psychology, 7*(7), 89-105.
- Kanwal, A., Zahid, A., & Afzal, A. (2023). Investigating the Benefits and Challenges of Blended Learning Approaches at the University Level. *Qlantic Journal of Social Sciences and Humanities, 4*(3), 76-89.
- Khan, M. S., & Bhatti, R. (2023). Cultural diversity in higher education: Challenges and opportunities for teaching and learning in Pakistani universities. *Pakistan Journal of Educational Research and Evaluation*, *11*(2), 87-104.
- Lage, M. J., Platt, G. J., & Treglia, M. (2000). Inverting the classroom: A gateway to creating an inclusive learning environment. *The Journal of Economic Education, 31*(1), 30-43.
- Lee, J. J., Wang, C. C., & Chen, G. D. (2019). The impact of flipped classrooms on EFL learners' foreign language anxiety. *Educational Technology & Society, 22*(2), 239-249.
- Lundin, M., Bergviken Rensfeldt, A., Hillman, T., Lantz-Andersson, A., & Peterson, L. (2021). Higher education teachers' reflections on their digital teaching competence in light of a flipped classroom approach. *Education Sciences, 11*(1), 29 - 46.
- Mason, G. S., Shuman, T. R., & Cook, K. E. (2013). Comparing the effectiveness of an inverted classroom to a traditional classroom in an upper-division engineering course. *IEEE Transactions on Education, 56*(4), 430-435.
- Mezirow, J. (1991). *Transformative Dimensions of Adult Learning*. Jossey-Bass.
- Mishra, P., & Koehler, M. J. (2006). Technological Pedagogical Content Knowledge: A Framework for Teacher Knowledge. *Teachers College Record*, *108*(6), 1017-1054.
- Muamar, Z. D. S. (2022). Flipped Classroom Model For EFL/ESL Instruction in Higher Education: A Systematic Literature Review. *Journal of Language and Education*, *8*(3 (31)), 133-149.
- Piaget, J. (1972). *The Principles of Genetic Epistemology*. Routledge & Kegan Paul.
- Puentedura, R. R. (2006). *Transformation, Technology, and Education*. Retrieved from http://www.hippasus.com/rrpweblog/archives/2013/02/16/TransformationTechnologyAndEducation.pdf
- Rafiq, S., Afzal, A., & Kamran, F. (2022). Impact of School Environment on Students' Academic Achievements at the University Level. *VFAST Transactions on Education and Social Sciences 10*(4), 19-30.
- Rehman, H., Saeed, I. & Munir, F., (2023). Effect of The Flipped Science Classroom on Academic Achievement of Grade Seven Students. *Pakistan Journal of Educational Research and Evaluation*, *11*(1), 118-132.
- Rizwan, M., Ayub, S., & Khan, S. I. (2021). Effect Of Flipped Classroom Teaching On Students' Academic Achievement In Lexical Aspects Of English Language: Bloom Taxonomy In Flipped Classroom Teaching. *Ilkogretim Online*, *20*(1), 7150-7164.

- Roshan, R. L., Fathi, J., & Ly, T. (2017). Promoting student engagement by integrating new technology into tertiary education: The role of the iPad. *Australian Journal of Educational Technology, 33*(3), 41-52.
- Sims, R. (2006). *Designing and delivering effective online instruction: How to succeed in the online classroom*. Jossey-Bass.
- Smith, A., Rahman, M., & Khan, S. (2020). Exploring the impact of the flipped classroom model in Pakistani higher education. *Educational Sciences, 8*(2), 32- 49.
- Strayer, J. F. (2012). How learning in an inverted classroom influences cooperation, innovation, and task orientation. *Learning Environments Research, 15*(2), 171-193.
- Taylor, P. C., & Medina, M. (2011). Educational research paradigms: From positivism to pluralism. *College Research Journal*, *1*(1), 1-16.
- Tucker, B. (2012). The flipped classroom. *Education Next, 12*(1), 82-83.
- Vygotsky, L. S. (1978). *Mind in Society: The Development of Higher Psychological Processes*. Harvard University Press.
- Webb, M., & Doman, E. (2020). Impacts of flipped classrooms on learner attitudes towards technology-enhanced language learning. *Computer Assisted Language Learning*, *33*(3), 240-274.
- Weidmann, J. S. (2018). *A Phenomenological Exploration of Secondary Teachers' Perceptions of the Flipped Classroom Model*. Liberty University.
- Wu, X., & Wu, Y. (2022). Perceptions and challenges of flipped learning in Chinese higher education. *Educational Sciences, 12*(1), 51- 70.
- Yusuf, M. O., Yusuf, M. M., & Oladele, J. O. (2016). A meta-analysis of the effect of flipped learning on learning performance. *World Journal on Educational Technology: Current Issues, 8*(2), 98-105.
- Zainuddin, Z., & Perera, C. J. (2019). Exploring students' competence, autonomy and relatedness in the flipped classroom pedagogical model. *Journal of further and higher education*, *43*(1), 115-126.
- Zheng, J., Xie, Y., & Duan, C. (2020). A comparative study on the effectiveness of the flipped classroom in China and the United States. *Frontiers in Psychology, 11*, 1627.