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RESEARCH PAPER

Innovative Pedagogical Practices of Secondary School Teachers: Insights into Modern Teaching Approaches

[1]Tahir Islam and [2]Dr. Saira

1. PhD Scholar, Department of Education, University of Gujrat, Punjab, Pakistan
2. Lecturer, Department of Education, University of Gujrat, Punjab, Pakistan

| **Corresponding Author:** | islamt1971@gmail.com |

ABSTRACT

This research was conducted to study innovative pedagogical practices among the secondary school teachers like flipped classroom, technology integration, project-based learning, blended learning, and feedback evaluation with limitations restricted to secondary-level teaching. Creative pedagogies play an instrumental role in the promotion of teaching and learning, and their implementation among different set ups is not equal. Methods like technology integration and feedback-based assessment are also on the rise, whereas less is known about the approaches of flipped- and blended learning, which are in need of systematic assessment. A quantitative descriptive survey design was utilised The study was done on 624 teachers in secondary schools by using a structured questionnaire. Descriptive statistics were used to determine levels of adaptation and gap analysis helped to determine discrepancies between the ideal practices and the ones that are being followed. The sample was split into the male and female teachers to determine the disparities that existed on gender basis. The results indicated that the most concerned practice was the use of technology (M=4.72) and feedback assessment(M =4.62). On the other hand, flipped classroom (M = 4.10) and blended learning (M = 4.50) were the least adopted ones. In the gap analysis, flipped classroom and blended learning appeared to be the most mismatched (M = 1.09 and 1.07, respectively), with a little adoption of project-based learning. The similarity was found in the patterns of adaptation and gaps obtained by visual analysis of the data obtained equally among the male and female teachers. The professional development must be aimed at developing skills of flipped and blended learning. Alongside, project- based learning must be introduced more systematically and continue the good practices in terms of use of technology and feedback/evaluation.

| **KEYWORDS** | Innovative Pedagogical Practices, Secondary School Teachers, Flipped Classroom, Project-Based Learning, Blended Learning, Feedback Assessment, Technology Integration |

Introduction

Innovation is the new trend in education in accordance with the emerging requirements of learners and the requirements set by a globalized world. Conceptual approaches formerly based mostly on the teacher-centered model of instruction with rote learning continue to be augmented or even changed by the emerging, innovative approaches that have proven to improve the involvement, critical thinking and applicability of the knowledge to the real world. New pedagogy methods do not only lead to a more in-depth learning process, but they also teach the students skills needed in the complex and dynamic world. Some of these strategies include flipped classrooms, technology, project based, blended learning and effective feedbacks and assessments models that have become vital in the modern classroom.

In flipped classroom, the regular teaching paradigm is changed allowing students to access teaching material out of the classroom, which can be in the form of videos and online modules, and the use of classroom time is to be devoted to active learning, problem resolution and conversing (Bishop & Verleger, 2013). The process will foster independence

among students and enable tutors to offer mentorship to individuals in a manner that can be productive and effective in terms of knowledge gain.

Technology has emerged as a significant element in learning which advances interactive, involving, and team-based learning. Learning management systems, educational software and digital tools allow teachers to plan lively learning activities, add multimedia rich content, and monitor the progress of the learners (Hennessy et al., 2005). Use of technology does not only improve the delivery of instructions but also makes students ready to live in a technologically poised world.

Project-based learning (PBL), focuses on student centered inquiry and doing real world projects, that develops critical thinking, problem solving and collaborative activities among the students (Thomas, 2000). PBL also makes students more willing to translate theory into practice and as a result strengthen theory knowledge and increase its level of retention, and builds key soft skills.

Blended learning has combined the face to-face training and online activities and it presents flexibility in teaching and learning. It enables an educator to adjust the instruction to individual requirements and also enables differentiated instructional techniques as well as student engagement (Garrison & Vaughan, 2008). Blended learning encourages a more customized and successful learning experience since it incorporates numerous types of instructional presentation.

Lastly, feedback and assessment are part of good pedagogy as it allows teachers to determine individual progress of students and modify the pedagogical actions. Assessment forms that allow gaining information about knowledge gained by the students, monitor student learning, contribute to the learning process, and make it more efficient (Black & Wiliam, 2003) are called formative and summative. Assessment practices can therefore be potent tools of motivation to the learners as well as designing of teaching strategies when employed in an innovative way.

In secondary schooling, the teachers are central figures in adoption of these new pedagogical elements to improve the learning outcomes of students. As the perceptions and mindsets of teachers with respect to the use of flipped classrooms, technology-based learning, project-based learning, blended learning, and feedback techniques are fundamental to assessing the gap between perception and practice, what is learned is fundamental when it comes to planning a professional development program to support teacher use of these instructional strategies. This paper thus aims at examining the innovative practices of the secondary school teachers and give present insights into the incorporation of the modern teaching methodology practices in the achievement of optimal learning.

Secondary education is becoming a difficult task to master considering the changing curriculum requirements, the diverse needs of the learners, and the speed with which there has been an increase in the usage of technology in education. The main disadvantages of traditional pedagogical practices regard rote learning and teacher-directed activity, which restraint the engagement of students, their critical thinking, and problem-solving skills. Even though innovative teaching practices, including flipped classrooms, project-based learning, blended learning, technology integration, and effective feedback practices, are known to be very important, there is scarce research on how teachers in secondary schools perceive them and apply them in their teaching practice. To identify gaps between the current practices and effective innovative pedagogy is necessary to understand the perceptions of teachers and design and implement the professional development programs that will increase the level of teaching effectiveness and lead to improved student learning.

Literature Review

The current trend of complexity in the modern education has necessitated teachers to use novel strategies in teaching to accommodate the different needs of learners and raise the quality of learning. Conventional, instructor-led procedures have been widely criticized to be lacking in helping students develop critical thinking skills, creativity as well as collaborative engagements with their colleagues. To address this, teachers and scholars have put a lot of emphasis on innovative practices, including flipped classrooms, project-based learning, blended learning, technology integration, and beneficial outcome pathways of providing feedback and assessment.

The model of flipped classroom has come out as a pedagogical practice that reformulates the educational format of the lessons. With this model, instruction becomes independent of the classroom and can be accomplished through videos and or online modules, with active learning, problem solving and collaborative work being the practice in the classroom. Studies have found that flipped classrooms result in improved student engagement, self-directed instruction and thinking skills of higher orders (Chen et al., 2017). Through redistribution of instructors and learner time, teachers are able to provide improved personalized mentorship, meet individual learning needs, and open avenues of customer service. The approach is intended to will also lead to meta skills and independence amongst students as they become responsible of their own learning.

The next dry estate pedagogy features capable of promoting depth believing is project-based learning. PBL focuses on the student directed inquiry, real-life problem solving, and cooperative project work. PBL is reported to not only improve critical thinking skills and creativity development but also works towards strengthening communication and collaboration between learners (Bell 2010). Through practical projects, students get to learn how to apply theoretical knowledge in application, essentially increasing retention and comprehension. Educators who use PBL, need to engage in a new level of facilitation that requires distracted students to transform complex problems into solutions and be creative and thoughtful.

Blended learning is a combination of conventional classroom learning and online learning opportunities that allow a more flexible education that meets the differences in learning needs. This plan enables educators to develop lessons that are interactive and adaptive and student-centered. According to Graham, resources are increased in blended learning, learners are allowed to work at their pace and are also able to learn at a differentiated pace. When instructors use blended learning strategies, learning materials can be customized to the needs of individual students and this enhances engagement and better learning outcomes. In addition, blended learning expands the skills of digital literacy and also equips learners to operate in tech-rich environments (Graham, 2013).

Technology-assisted teaching in the classrooms has become a necessity in modern education. Computer-based applications, digital interactive tools, software, and learning management software, and multimedia-based learning can enhance teaching-learning by making the process interactive, active, and collaborative (Voogt et al., 2013). Technology allows teachers to plan simulations and visualization and interaction rates that produce enhanced conceptual learning. It also makes it easier to collaborate outside of the classroom through internet-based forums and discussions, as well as projects that are shared across the board. The efficient use of technology implies that not only the technological proficiency of the teacher should be improved but also the digital pedagogical competence of an educator.

High-quality feedback and assessment tactics become crucial to enhancing learning outcomes and steering the teaching practice. Formative assessments, frequent feedback and reflective teaching avenues enables the instructor to continually assess progress in students

and make adjustments as need be in the teaching paradigm (Shute, 2008). When used creatively, assessment becomes a learning tool as opposed to an evaluation tool. The assessment data can be used by teachers to learn the gaps in learning, reinforce strengths and follow specialized interventions. In addition, the feedback allows the students to become self-regulated, critically reflective and those that can apply knowledge in a new situation.

The literature has noted that innovative pedagogical practices have a positive effect on student engagement, learning and development of skills. Technology integration, along with flipped classrooms, PBL, blended learning, and effective feedback are proven to develop critical thinking, creativity, communication, and collaboration, essential skills. Implementation however requires qualified skills, training, and support of teachers. Literature has shown the discrepancy among the theoretical theories and practices in secondary schools, which creates the importance of research focusing on the reality of secondary teachers as they tame the strategies into practices in their schools. It is important to be aware of the level and quality of these pedagogical practices to be able to formulate specific professional development programs, to enhance the teaching, and to give students what they need to succeed in the modern education environment.

Material and Methods

This paper involved a quantitative descriptive survey research design to understand how teachers engage in innovative pedagogical practices by looking at flipped classrooms, project-based learning, blended learning, and technology use as well as feedback assessment in secondary schools. Descriptive study design was selected because it offers a good representation of the existing practice in teaching without being able to artificially manipulative variables. The design is diagnostic with the purpose of identifying the actual state of pedagogical practice and revealing the gaps between the reality and the ideals. Participants of his study were all teachers of secondary schools employed in the government institutions belonging to District Gujrat. Teachers were the target population given the significant role that they play in benefiting the learning process of the students through the introduction of transformative pedagogical approaches. A total of 624 teachers were sampled through stratified random sampling method in provision of equal representation in male and female schools. Stratification minimized the bias associated with the sampling and maximized the results generalizability. The study used structured self-developed questionnaire that served to measure innovative pedagogical practices among secondary school teachers. The questionnaire was oriented at five areas, one of which is flipped classroom, project-based learning, blended learning, the use of technology, and feedback assessment. There were several items under each area that were rated on a 5-point Likert scale (1 =Strongly Disagree, 5 =Strongly Agree) that evaluated the degree to which teachers practice the specific measures in their classrooms. To certify content validity, panelists who were experts in the education and instructional technology filed responses on the exactness, meaningfulness, and comprehensiveness of questions. A pilot study with 30 teachers was used as a tool to verify the reliability and understandability of the instrument. The reliability analysis revealed acceptable internal consistency in all the scales that supported the ideology that the questionnaire could be used to assess the stipulated constructs.

Table1
Reliability Values of Innovative Pedagogical Practices Questionnaire (IPPQ)

Sub Scales	Number of Statements	Reliability Coefficient
Flipped Classroom (FC)	5	0.834
Use of Technology (UT)	4	0.722
Project-Based Learning (PB)	5	0.727
Blended Learning (BL)	5	0.838
Feedback Assessment (FA)	3	0.708
Total	22	0.892

Results and Discussion

The data gathered was analyzed using SPSS software, in order to give an overall picture of the innovative pedagogical practices of the secondary school teachers. The percentage of overall implementation of the five key areas which are flipped classroom, project-based learning, blended learning, use of technology, and feedback assessment, were calculated using measures of descriptive statistics such as the mean and the standard deviation. Then a gap analysis was also conducted where the current practice of teachers has been compared to the ideal pedagogical standards so that areas that need to be improved can be identified. Ethical considerations ensured that participants provided informed consent, the confidentiality and anonymity of responses was maintained and that the data was used only in academic research. Participating was voluntary and respondents were free to withdraw their participation at any point in the study.

Table 2
Adaption Level of Innovative Pedagogical Practices Among Teachers at Secondary Level

Innovative Pedagogical Practices	Frequency	%	Mean	Standard Deviation
Flipped Classroom	54	8.7	4.10	.56
Use of Technology	249	39.9	4.72	.38
Project-Based Learning	110	17.6	4.46	.31
Blended Learning	6	1.0	4.50	.45
Feedback Assessment	205	32.9	4.62	.33
Total	624	100.0		

The level of adaptations of innovative pedagogical practices by 624 secondary school teachers is shown in Table 2. The technology use was the most often implemented practice (249 teachers (39.9%) implemented it) and it received the highest score of 4.72 SD = 0.38), which indicates its common use in the classroom. Feedback assessment enjoyed moderate levels of adoption being deployed by 205 teachers (32.9%) with an average used of 4.62 (SD = 0.33) whereas project-based learning had an adoption of 110 teachers (17.6%) with a mean used of 4.46 (SD = 0.31). In comparison, only 54 teachers (8.7 %) used flipped classroom showing a mean of 4.10 (SD = 0.56), and only six teachers (1.0 %) adopted blended learning showing a mean of 4.50 (SD = 0.45) a significant fraction who used it. In general, the findings show that even though integration of technology and feedback evaluation are quite developed, such practices as flipped classroom and blended learning are implemented to a minimal degree, and these are spheres where professional development should be provided.

Table 3
Adaption Level of Innovative Pedagogical Practices Among Male Teachers at Secondary Level

Innovative Pedagogical Practices	Frequency	%	Mean	Standard Deviation
Flipped Classroom	24	7.7	3.94	.61
Use of Technology	120	38.5	4.71	.41
Project-Based Learning	55	17.6	4.47	.29
Blended Learning	2	.6	4.60	.57
Feedback Assessment	111	35.6	4.63	.32
Total	312	100.0		

Table 3 gives the level of adopting the innovative pedagogical practice among 312 male secondary school teachers. The use of technology was the most broadly carried out practice, with 120 teachers (38.5%) mentioning that they use technology and mean score of 4.71 (SD = 0.41) which represents strong integration of technology use in the classroom. The second fairly widely implemented practice was feedback, with 111 teachers (35.6%) responding to the frequency of feedback assessment with a mean of 4.63 (SD = 0.32), or consistently high assessment action. The practice of project-based learning indicated moderate use by 55 teachers (17.6%) with a mean of 4.47 (SD = 0.29). In comparison, flipped classroom was implemented among 24 teachers (7.7%) with only a mean of 3.94 (SD = 0.61), and blended learning had almost no adoption, having 2 teachers (0.6%) with a mean

of 4.60 (SD = 0.57). The overall statistics show that male teachers feel the most comfortable in using technology and assessing feedback, whereas the flipped and blended learning practices are underutilized, which is areas, where teacher training and professional development could be aimed.

Table 4
Adaption Level of Innovative Pedagogical Practices Among Female Teachers at Secondary Level

Innovative Pedagogical Practices	Frequency	%	Mean	Standard Deviation
Flipped Classroom	30	9.6	4.22	.49
Use of Technology	129	41.3	4.72	.35
Project-Based Learning	55	17.6	4.46	.34
Blended Learning	4	1.3	4.45	.47
Feedback Assessment	94	30.1	4.61	.33
Total	312	100.0		

Table 4 provides the degree of adaptation of innovative pedagogical practice among the 312 female teachers of secondary schools. The most common practice adopted was use of technology with 129 teachers (41.3%) greatly integrating its use in classroom instructions and a mean score of 4.72 (SD = 0.35). The moderate adoption was in flipped classroom whereby it was practiced by 30 (9.6) teachers with a mean of 4.22 (SD=0.49). Project-based learning found its use among 55 teachers (17.6%) with the mean value of 4.46 (SD = 0.34), but blended learning was a little less used in the work of only 4 teachers (1.3%) with the mean value of 4.45 (SD = 0.47). The use of feedback assessment among 94 teachers (30.1%) was 4.61 (SD = 0.33) which is considered consistent. On the whole, the results show that the female teachers are most accustomed to using the technology and feedback assessment, but less likely to embrace the approach of flipped classroom and blended learning, which means that these areas can be improved through professional development and instructional assistance.

Table 5
Descriptive Statistics of Gap Scores in Teachers' Innovative Pedagogical Practices at Secondary Level

Innovative Pedagogical Practices	N	Minimum	Maximum	Mean	Std. Deviation
Flipped Classroom	624	0.00	2.60	1.09	0.43
Use of Technology	624	0.00	2.50	0.57	0.48
Project-Based Learning	624	0.00	2.20	0.65	0.47
Blended Learning	624	0.00	3.00	1.07	0.49
Feedback Assessment	624	0.00	2.33	0.52	0.50

Table 5 shows the gap scores of innovative pedagogical practices of secondary school teachers and are the differences between the ideal score and current implementation. Flipped classroom (Mean = 1.09, SD = 0.43) and blended learning (Mean = 1.07, SD = 0.49) showed the largest differences between the implemented and ideal categories; results indicating that the former are least and the latter most implemented competencies relative to other competencies. Partial adoption was detected in the area of project-based learning (Mean = 0.65, SD = 0.47) and use of technology (Mean = 0.57, SD = 0.48), moderate gap. The lowest discrepancy was in feedback assessment (Mean = 0.52, SD = 0.50) whereas the teachers have relatively matched skills when it comes to using this practice. Comprehensively, the results demonstrate professional development and assistance is necessary, more so, in flipped classroom and blended learning to minimize gaps and improve adoption of innovative in-class instructional methods.

Table 6
Gap Analysis of Male Teachers' Innovative Pedagogical Practices at Secondary Level

Innovative Pedagogical Practices	N	Minimum	Maximum	Mean	Std. Deviation
Flipped Classroom	312	0.00	2.60	1.10	0.44

Use of Technology	312	0.00	2.50	0.58	0.49
Project-Based Learning	312	0.00	2.20	0.66	0.47
Blended Learning	312	0.00	3.00	1.07	0.50
Feedback Assessment	312	0.00	2.33	0.51	0.51

Table 6 displays the gap scores of the innovative pedagogical practices given to 312 male secondary school educators. The most significant variances were noted in flipped classroom (Mean = 1.10, SD = 0.44) and blended learning (Mean = 1.07, SD = 0.50), where these practices are the least current available to the ideal ones. Partial adoption was observed in project-based learning (Mean = 0.66, SD = 0.47) and use of technology (Mean = 0.58, SD = 0.49) as those areas had moderate gaps. The smallest margin was in the assessment of feedback (Mean = 0.51, SD = 0.51), where men are relatively effective in using assessment strategies. The data as a whole suggest that professional development of teaching should be centered on upgrading flipped classroom and integrated classroom practices in order to mitigate the gaps that exist.

Table 7
Gap Analysis of Female Teachers' Innovative Pedagogical Practices at Secondary Level

Innovative Pedagogical Practices	N	Minimum	Maximum	Mean	Std. Deviation
Flipped Classroom	312	0.00	2.40	1.09	0.43
Use of Technology	312	0.00	2.50	0.56	0.47
Project-Based Learning	312	0.00	2.20	0.64	0.46
Blended Learning	312	0.00	2.60	1.06	0.47
Feedback Assessment	312	0.00	2.33	0.52	0.49

Table 7 shows the scores of the gap on innovative pedagogical practices of 312 female secondary school teachers. Flipped classroom (Mean = 1.09, SD = 0.43) and blended learning (Mean = 1.06, SD = 0.47) had the greatest gaps indicating that they are least practiced according to ideal standards. A partial adoption was recorded in project-based learning (Mean = 0.64, SD = 0.46) and use of technology (Mean = 0.56, SD = 0.47). The narrowest difference was recorded in feedback assessment (Mean = 0.52, SD = 0.49), indicating that women in teaching are quite competent in implementing assessment practices. On the whole, the findings indicate that the professional development should focus on introducing flipped classroom and blended learning practices in order to eliminate the disparities and increase the use of innovative teaching methods among female teachers.

Discussion

The current research conducted was on examining the innovative pedagogies of the secondary school teachers, with regard to the flipped classroom, technology usage, project-based learning, blended learning, and feedback assessment. The results indicate that technology use and getting feedback assessment are the most reason use of technology by teachers although it is considered to be quite well-established strategy in classroom instructions. This is in accordance with earlier findings that integration of technology and use of formative assessments come into play that improve on the student involvement and their achievement (Ertmer and Ottenbreit-Leftwich, 2010; Black and Wiliam, 2009). PBL is modestly used, and the flipped classroom and blended learning is implemented only to the lesser extent showing that the emerging of new teaching and learning methods is still at an early stage. The gender-based study also indicates the same adaptation trends where by gender of teacher does not make any significant difference in adoption of innovative pedagogical practices. These results show the strengths and the gaps, where professional development can be used to the fullest to enhance the best teaching practices (Koehler & Mishra, 2009).

Gap analysis indicated that flipped classroom and blended learning are the most notable in discrepancy between the ideal and reality implementation, indicating the

necessity of special measures. Judges showed moderate differences on the project-based learning and technology utilization whereas the least difference was on the feedback assessment which means the judges were relatively competent on the areas of assessment strategies. These findings support existing literature stating that although teachers can implement certain elements of innovation successfully, developing the entire framework has been limited by the fact that teachers lack training, time, and adequate resources to do so (Guskey, 2002; Lo, 2018). The parity of gaps confirms that professional development efforts need to be directed toward skills development and capacity building in less frequently used instructional solutions such as flipped and blended learning. Filling these gaps may assist in making teacher activities in the classroom conform to the requirements of modern education and better learning outcomes.

Conclusion

The adaptation level analysis has revealed that the secondary school teachers are most accomplished in their use of technology and feedback assessment where there is high level of integration of these practices in classroom teaching. Moderate adaptation of the project-based learning, less popular strategies include flipped classroom and blended-learning. Gender wise analysis painting a similar picture, both male and female teachers reported high adaptation in the use of technology and feedback assessment and very low adoption of flipped and blended learning. On the whole, it can be noted that although certain innovative pedagogical practices have become well-established, there are still innovative pedagogical practices that are underperformed and that need specific attention. The gap analysis brings out the difference between desire and practice of novel pedagogical approach. The gaps are the most notable in flipped classroom and blended learning, which are not yet incorporated altogether in the teaching practice. Moderate gaps represent project-based learning and use of technology whereas the narrowest gap is feedback assessment, which indicates competence of the teacher in this sphere. Gender-based comparisons also have the same trend, with both men and women teachers having wide gaps in flipped and blended learning. These findings necessitate the importance of specialized professional training in order to minimize the discrepancies and increase the total employment of new instructional methods.

Recommendations

The largest gaps found in the study should be filled by creating specific training requirements to develop the capacity of the teachers related to implementing the flipped classroom and blended learning practical strategies. The role of the teacher should be to encourage and support him or her to embrace project-based learning more effectively to facilitate student centered learning and critical thinking skills. Even though the use of technologies is high, continuous workshops and intervention are necessary so that educators can successfully use technology to influence student achievement. After analyzing the smaller gaps identified through feedback assessment, schools can further develop and extend its application by leveraging through a variety of assessment methods able to give corrective and actionable feedback to students.

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