

Flipped Classroom Approach to Enhance Students' Academic Performance at the University Level: Teachers' Perspective

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Abstract: One instructional strategy that is getting popularity is known as the "flipped classroom paradigm of learning." In this pattern, lectures and other activities that would normally take place in the classroom, such as demonstrations, are carried out at the students' homes. On the other hand, activities that would normally be carried out outside of the classroom are carried out in the classroom. There is a scarcity of evidence on the efficacy of this instructional technique at present. The purpose of this survey was to add to the expanding body of evidence regarding the flipped classroom model of education by investigating how preservice instructors perceive the model as well as how it affects the academic performance of students. When comparing the flipped model to the traditional approach, we found that the conventional method produced significantly better results in terms of academic achievement. In addition to this, we came up with several possible elements that have an influence.

Key Words: Flipped Classroom, Students, Teachers, University.

Introduction

In recent years, new educational ideas have come into existence as a direct result of the widespread adoption of technology in the classroom. One instructional approach that is gaining recognition is known as the "flipped classroom" concept. In this simulation, events that would typically take place in the classroom, such as lectures and demonstrations, are moved out of the classroom and into other locations, while tasks that would normally be due outside of the classroom are carried out in the classroom itself. The objective is to do more economical application of the period that the instructor spends in the classroom by providing them with the necessary support and scaffolding to assist students in applying what they have just learned. This circumstance also goes by the

label "inverted classroom," which is another name for it. From our viewpoint, this prototype comprises numerous important modules that are not only substantiated by exploration but are also perfect from a speculative standpoint. These characteristics include (a) embracing a variety of theoretical viewpoints, such as learning theory, socio-constructivism, and activity theory (Jonassen and Murphy, 1999; Vygotsky, 1978); and (b) offering opportunities for differentiating instruction. Jonassen and Murphy (1999) and Vygotsky (1978) both found that activity theory, learning theory, and socio-constructivism were effective in helping students learn (Tomlinson and McTighe, 2006; Brok et al., 2010) The number of interactions between teachers and students is increased, and (d) mobile learning, in particular, is made available to teachers and students, allowing them to profit from contemporary instructional

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technology approaches. Before analyzing its consequences, you must understand how a flipped classroom works. The flipped classroom restructures classroom and outside-class time to shift learning obligations to students. Project-based, hands-on learning is a lecture style alternative. Students have a goal (Alexander et al., 2019). Before class, students watched the video lecture and read. Students use newly learned skills throughout the lesson. This reinforces and applies learning. How engaging and student-centered a class activity is should decide its importance.

Students and teachers prefer flipped classrooms. Flipped classrooms are becoming common in American schools because of interactive movies, in-class activities, and digital conferencing technologies (Johnston, 2016). Some say flipped classrooms are the best way to integrate technology into learning, but some oppose (Cabi, 2018). The flipped classroom has been analyzed in information systems (Davies et al., 2013), sociology, engineering, the humanities (Kim et al., 2014), English composition, and math (Zengin, 2017).

Researchers and teachers have worked hard to find new ways to engage pupils. Flipped classrooms will grow in higher education, say experts (Yildirim and Kiray 2017). Integrated education reverses the face-to-face teaching concept. This paradigm uses current technologies to change teaching and learning. Outside, it teaches pupils theoretical stuff; in class, they apply it (Strayer, 2012; Bergmann and Sams, 2012). In a flipped lecture hall, students do homework at home and simulate assignments.

Taking into account the inadequate empirical investigation on the flipped classroom style of tutoring, we investigated that investigated teachers' evaluations of the style and the influence of the pattern on learner accomplishment.

Methodology

When the flipped classroom learning approach was commissioned, there was consideration given to conducting a study on the overall academic performance of the scholars. For the most part throughout this exploratory investigation, the researcher depended on the utilization of a questionnaire to collect information. It was essential for instructors to take part in the study because there is no information available on the relationship between academic accomplishment and their engagement in flipped classrooms. The study was quantitative, and the academic performance of students who were enrolled at Rawalpindi Women university and National university of modern languages Islamabad and was evaluated with the help of a bi-annexed survey (demographics and measurement items, using a five-point Likert scale ranging from "1, strongly disagree," to "5, strongly agree"). The information was meant for dissemination to professors working at National University of Modern Languages and Rawalpindi Women universities. More specifically, those lecturers were teaching courses in management, education, or computer science. After calculating the appropriate sample size with the help of Gay's approach, the researcher intended to take a sample of members of the population that was the focus of the study. According to Gay et al. (2009), if the total population being studied is 5,000, then the entire population being studied is immaterial, and a sample of up to 400 respondents is almost regarded as sufficient. If the population being studied is larger than 5,000, then the entire population being studied is relevant. This was discovered during their investigation into the matter. Another element that might influence the size of the sample is the degree of homogeneity or heterogeneity that exists within the population that is being sampled.

Table 1. Sample size advocated by Gay

Size of Population	Sampling Percent
<100	Entire Population
~500	250% (250)
~1500	20% (300)
>5000	400

The population was previously known, so the survey was conducted using a method called random sampling, which is suitable for leading survey investigations in cases when the population is already known. In harmony with

the regulations that were set by the Gay methodology, a aggregate of 56 respondents were absorbed into the survey, and the whole populace of those respondents was selected.

Table 2. Population Distribution (Teachers)

Population	Education Department	Management Sciences	Computer Science	Total
Rawalpindi Women University	9.00	5.00	4.00	18.00
National University of Modem Languages Islamabad	8.00	15.00	15.00	38.00
Total Students	17.00	20.00	19.00	56.00

The researcher circulated survey forms to collect data from respondents. The investigator's own creation of a questionnaire allowed the investigator to acquire additionally detailed evidence about the flipped classroom methodology and the student's scholarly

Achievement. Analytical techniques like SPSS were utilized to appraise the data collected from the examination replies. Using SPSS evaluation, the investigator can compile and assess the requisite data.

An example of the survey is presented below.

Questionnaire

ANNEX (A)

Research Questionnaire for Teachers

Dear respondent,

This survey aims to investigate the “Flipped Classroom Approach to Enhance Student’s Academic Performance at the university level: Teacher’s perspective”. The data that you will give will be utilized distinctly for educational purposes and will be kept confidential So, you are kindly requested to provide the correct data. If you are unsure about a question, Please make your best effort to choose the most reasonable answer.

Demographic Information

- 1. Please indicate your gender
 - a. Male
 - b. Female
 - 2. Department
 - a. Computer Science
 - b. Engineering
 - c. Social Sciences
 - d. Other, please specify
 - 3. Residence/locality
 - a. Urban
 - b. Rural
 - 4. University name
 - a. Rawalpindi Women University
 - b. NUML Islamabad
- Directions: For question, please choose the response that best describe your situation
- 5. Do you utilize a flipped classroom with any of your teachings?
 - a. Yes
 - b. No
 - 6. What grade Level do you flip?
 - a. Bachelor
 - b. Master
 - c. MPhil
 - d. PhD
 - e. Other

Questionnaire

7. What content areas do you flip?
- a. English
 - b. Math
 - c. Social Sciences
 - d. IT
 - e. Other. Please specify ...

ANNEX (B)

No.	Questions	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
1.	The Flipped Classroom is more engaging than traditional classroom instruction					
2.	Absent students benefit from this classroom approach					
3.	This classroom approach is difficult for some students to access due to the additional technology required outside of university					
4.	Teachers experienced technical issues that could also hinder others from making die necessary videos					
5.	The amount of time it takes to make die corresponding videos for die flipped instruction is extensive because of that teachers may be frustrated or apprehensive to try die pedagogy					
6.	Students do not need the teacher present for direct instruction but students need die teacher present for solving the problem					
7.	In this classroom, video lectures make die class more transparent to parents					
8.	Discussions with parents center more on learning than they do on classroom behavior when using this classroom					
9.	This classroom allows teachers more time to					

ANNEX (B)		Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
No.	Questions					
	personalize instruction for students					
10.	Students prefer this classroom over die traditional classroom					
11.	This classrooms approach allows teachers to have increased interaction with students					
12.	Time created for in-class activities in this classroom allows for more active learning and increased higher-order thinking for students					
13.	This instructional format kept students engaged and allowed them to reach a deeper level of thinking through small group activities					
14.	The student who uses and has grown up in and around this technology will be different than a student who used to take encyclopedias off a library shelf					
15.	Students discipline issues decrease in this classroom					
16.	Flipping the classroom removes passive learning from die classroom					
17.	Recorded lectures aid struggling students because they can re-watch portions of lessons they do not understand					
18.	Students l earn better in this classroom					
19.	In this classroom, students have a sense of responsibility for their learning and come prepared to class					
20.	This classroom approach allows students to develop a better relationship with their peers through co-operation and collaboration					

ANNEX (B)						
No.	Questions	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree
21.	Flipping die classroom creates time for direct instruction, active learning activities and content coverage					

Results

Demographic Data

A tabulation was performed on the demographic data that the respondents had supplied to highlight the pattern of their demographic traits. The most important demographic parameters that were measured in the study were the respondent's gender, grade level, subject areas, location or locality, and the department to which they belonged. Flipped classrooms, grade levels, and topic areas were also measured. The tabulations of the respondents' biographical data are shown in the following tables, and they are organised according to the attributes discussed before.

According to the data presented in table 3, a total of 56 respondents were able to deduce their gender from the responses they supplied on the questionnaire that was provided. Only 13 of the respondents were female, making up only 26.8% of the total, while 41 of the respondents were male, making up 73.2% of the total. In addition, there were 36 respondents from the department of education, which accounted for 46.4% of the total, 18 respondents from the department of management science, which accounted for 32.1% of the total, and 12 respondents from the department of computer science, which accounted for 21.4% of the total. According to the findings of the study, 49.2% of respondents were from metropolitan regions, with 27 respondents coming from urban areas, while 51.8% of respondents were from rural areas,

With 29 respondents coming from rural areas.

The findings show that 22 of the respondents had a bachelor's degree, which accounted for 39.3% of the total; 7 of the respondents had a master's degree, which accounted for 12.5% of the total; 12 of the respondents had an MPhil degree, which accounted for 21.4% of the total; and 15 of the respondents had a Ph.D., which accounted for 26.8% of the total. As a direct consequence of the findings of the study, 41 of the total respondents were utilising the Flipped Classroom Approach, which accounts for 73.2% of the total, whereas 15 of the total respondents were not utilising the Flipped Classroom Approach, which accounts for 26.8% of the total. The information presented below reveals that out of the total respondents, seven of them changed their minds about their subjects for English, which accounts for 12.5% of the total; twenty-five of them changed their minds about their subjects for mathematics, which accounts for 44.6% of the total; eighteen of them changed their minds about their subjects for social sciences, which accounts for 32.1% of the total; and six of them changed their minds about their science subjects. The assessment was finalized by twenty-two educators from National University of Modern Languages, accounting for 57.10% of the whole; twenty-four instructors from Rawalpindi Women University finished the assessment, account for 42.90% of the aggregate.

Table 3. Demographic Data of Respondents

Parameter		Frequency	(%)	Valid (%)	Cumulative (%)
Gender	Male	41.00	73.20	73.20	73.20
	Female	15.00	26.80	26.80	100.00

Parameter		Frequency	(%)	Valid (%)	Cumulative (%)
Department	Management Science	18.00	32.10	32.10	32.10
	Education	26.00	46.40	46.40	78.60
	Computer Science	12.00	21.40	21.40	100.00
Residency	Urban	27.00	48.20	48.20	48.20
	Rural	29.00	51.80	51.80	100.00
University	National University of Modern Languages	32.00	57.10	57.10	57.10
	Rawalpindi Women University	24.00	42.90	42.90	100.00
	Utilizing Flipped Classroom	Yes	41.00	73.20	73.20
	No	15.00	26.80	26.80	100.00
Education Level	Bachelor	22.00	39.30	39.30	39.30
	Master	7.00	12.50	12.50	51.80
	M. Phil	12.00	21.40	21.40	73.20
	PhD	15.00	26.80	26.80	100.00
Specialization	English	7.00	12.50	12.50	12.50
	Math	25.00	44.60	44.60	57.10
	Social Sciences	18.00	32.10	32.10	89.30
	Computer Science	6.00	10.70	10.70	100.00

Descriptive Statistics

The results of the descriptive analysis are as described below. The mean illustrates the core tendency of the data. The value of a variable's mean represents its average value. The maximum and minimum values are used to illustrate the range. This summary table 4 provides information regarding the number of observations, as well as the mean, highest and least values, and standard deviation for every of the dependent and independent variables that were considered in this research. A general descriptive statistic regarding the effectiveness of the flipped classroom approach and its relationship to the academic accomplishment of students is presented in the table. Teachers at National University of Modern Languages and Rawalpindi Women University in

Islamabad and Rawalpindi, Pakistan, contributed information to the current study. This information was gathered from teachers in three distinct departments. The researcher went to Islamabad and Rawalpindi, Pakistan, and collected in-depth information on 56 university instructors there. Both the minimum and highest values for the Flipped Classroom Approach come in at 35.36 and 50.45, respectively. 41.95 is the number that represents the mean. The range of possible points awarded to students based on their academic performance is from 33.40 to 45.50. 38.51 is the number that represents the mean. The pupils' overall educational performance has a standard deviation of 5.03, whereas the flipped classroom approach has a standard deviation of 3.69.

Table 4. Descriptive Statistics of the data

	N	Lowest	Extreme	Average	Std. Deviation
Flipped Classroom Approach	56	35.36	50.45	41.9464	5.02809
Students' Academic Performance	56	33.40	45.50	38.5107	3.69317
Valid N (listwise)	56				

Correlation

Through the use of correlation, the researcher will be able to determine the types of relationships that are present between the various variables. There are three possible outcomes for any given relationship: neutral, positive, or negative. In addition, the degree of association can vary. The highest possible range is one point, while the lowest possible range is one point. If the correlation findings show that the value is close to +1 or is +1, then there is a strong positive correlation between the variables. On the other hand, there is a strong negative correlation if the correlation data show that the value is close to -1 or is -1. If the correlation value is 0, then there is neither a connection nor a correlation; rather, the situation is neutral. In addition, the results of the correlation analysis may reveal either a quickly positive or quickly negative link between the two variables. The data from the Statistical Package for the Social Sciences

(SPSS) were used to acquire information regarding the relationship between the Flipped Classroom Approach and the academic accomplishment of students and to conduct an evaluation of that information. The following is a list of the academic achievements attained by the following students: To investigate the connection that exists between the causes and the outcomes, a correlation analysis was carried out. According to the data presented in the table that can be seen above, there is a connection that can be described as "positive" between the independent variable "Flipped Classroom Approach" and the dependent variable "Students' Academic Performance." The coefficient of correlation comes in at 0.951. Given that there is a correlation between the Flipped Classroom Approach and the academic accomplishment of students, it is reasonable to infer that the implementation of this strategy has resulted in an improvement in the academic standing of students.

Table 5. Correlations

		Flipped Classroom Approach	Students' Educational Performance
Flipped Classroom Approach	Pearson Correlation	100	0.951**
	Sig. (2-tailed)		0.000
	N	56.00	56.00
Students' Academic performance	Pearson Correlation	0.951	1.00
	Sig. (2-tailed)	0.000	
	N	56.00	56.00

***. Correlation is significant at the 0.01 level (2-tailed).*

Regression

Regression evaluation is utilized by researchers in instances where they are necessary to make prognoses concerning the relation among the discrepancy in 1 variable and the disparity in a different variable. This helps them determine the causes and effects of the variables. The coefficient intercept illustrates the relationship that exists between the variables that are being studied, which are known as dependent variables. The common rule of thumb is that a relationship is considered significant if the value of the relationship is less than 5%, and it is considered trivial if the value of the

relationship is greater than 5%. A study using regression analysis found a significant correlation, in the positive direction, between the Flipped Classroom Approach and the academic achievement of pupils ($r = 0.699$, $t = 22.63$, $P 0.05$). The use of tactics that flipped the traditional classroom setting had a substantial impact on the academic achievement of the pupils ($R^2 = 0.90$, $F = 512.21$, $P 0.05$). Because the P-value for the Flipped Classroom Approach is lower than the 0.05 threshold that's necessary for significance, the findings can be considered reliable. The discovery is significant since the P-value for

Students' Academic Performance is lower than 0.05, which indicates the importance of the finding. The coefficient of determination, or R-

squared, provides evidence that our independent variable, 90%, influences the dependent variable.

Table 6. Regression Analysis

Model	R	R Square	Adjusted R Square	Std. error of the Estimate
1	0.95 ^a	0.90	0.90	1.15

a. Predictors: (Constant), Flipped Classroom Approach

Table 7. Analysis of Variance (AOV)

	Model	SS	df	MS	F	Sig.
1	Regression	678.63	1	678.63	512.21	0.000 ^b
	Residual	71.55	54	1.32		
	Total	750.18	55			

a. Dependent Variable: Students' Academic Performance, b. Predictors: (Constant), Dipped Classroom Approach

Table 8. Coefficients

	Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
		B	Std. Error	Beta	t	
1	Co efficient	921	1.30		7.06	0.000
	Flipped Classroom Approach	0.699	0.031	0.951	22.63	0.000

a. Dependent Variable: Students' Academic Performance

Conclusion

When the teachers finished their lectures utilising digital lessons at home and completed their work and assignments in class as we discussed them, their overall performance improved. This made everyone's time more effectively used. According to research comparing standard lecture formats with those utilised in flipped classes, students who

participate in flipped education score better academically overall than those who do not. Professors preferred this method of learning over the more conventional one, which mostly consisted of lectures. The flipped classroom is an excellent teaching method at the graduate level that has a positive impact on academic teaching and learning procedures. The use of flipped classrooms is growing in popularity.

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