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Flipped Classroom: An Effective and Interactive Pedagogy

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Abstract

Pedagogical tools are designed to express important lessons and allow people to develop their understanding. Traditionally, pedagogical tools include worksheets, textbooks, hand-outs and hands-on models. Technology has played a major role in this advancement with students and teachers using tools such as websites or mobile device applications. One of the most exciting advancements in the modern classroom is flipped classroom. It hinges on the idea that students learn more excellently by using class time for small group activities and individual attention. Teachers assign students lecture materials and presentations to be viewed at home prioritizing active learning during class hours. The flipped class strategy is one of the modern strategies to overcome the traditional of higher education by reaching effective integration of technology due to its huge potential to change the methods and strategies of internet-based learning and education. It is hoped to provide education commensurate with the requirements and the needs of students today. Hence this study attempts to analyse the flipped classroom as an effective and interactive pedagogy. The main objectives of this study are, To present the socio economic profile of the sample respondents in the study area. To know about the importance of flipped classroom. To assess the awareness of students about interactive pedagogical tools. To analyse the opinion of students about the benefits of flipped classroom. To examine the challenges faced by the students on the adoption of flipped classroom. To offer suggestions on the basis of findings of the study. The present study is based on both primary and secondary data. Primary data have been collected from 140 students in Virudhunagar district who were selected by convenience sampling method. The collected data were edited, tabulated and analysed for the purpose of presentation. Percentage analysis, Likert's five point scaling technique and weighted ranking technique have been applied to analyse the data. Secondary data have been collected from various journals, books and websites.

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Keywords

Pedagogy, Flipped class room, Technology, flipped classroom.

Introduction

Pedagogical tools are designed to express important lessons and allow people to develop their understanding. Resources are used to enhance, support and facilitate the learning situation. Traditionally, pedagogical tools include worksheets, textbooks, hand-outs and hands-on models. Traditional learning models incorporate direct

instruction in which instructor focussed approach to teaching where lessons are highly scripted and structured. In this model, the instructor presents content in the form of lectures and the students become a passive learner. As people have learned more about the way individuals learn, however, educators and students have branched out to other types of pedagogical tools. Technology has played a major role in this advancement

with students and teachers using tools such as websites or mobile device applications. One of the most exciting developments in the modern classroom is flipped classroom. It hinges on the idea that students learn more excellently by using class time for small group activities and individual attention (Butt, 2014). Teachers assign students lecture materials and presentations to be viewed at home prioritizing active learning during class hours.

Statement of the Problem

Modern information and communication technology has contributed to the development and change of modern education and the advent of innovative strategies based on various tools of technology. The most prominent of which has recently spread in education is the flipped classroom. It is a form of integrated education that intelligently employs modern technology.

The flipped class strategy is one of the modern strategies to overcome the traditional of higher education by reaching effective integration of technology due to its huge potential to change the methods and strategies of internet-based learning and education. It is hoped to provide education commensurate with the requirements and the needs of students today. Hence this study attempts to analyse the flipped classroom as an effective and interactive pedagogy.

Scope of the study

The scope of the present study is confined to know about the importance of flipped classroom, assess the awareness of students about interactive pedagogical tools, analyse the opinion of students about the benefits of flipped classroom, examine the problems faced by the students on the adoption of flipped classroom and the measures that can be taken to increase the usage of flipped classroom as an effective and interactive pedagogy.

The main objectives of this study are

To present the socio economic profile of the sample respondents in the study area.

To know about the importance of flipped classroom.

To assess the awareness of students about interactive pedagogical tools.

To analyse the opinion of students about the benefits of flipped classroom.

To examine the challenges faced by the students on the adoption of flipped classroom.

To offer suggestions on the basis of findings of the study.

An attempt is made to review the available literature related to the topic of this research.

S. Amutha and M. Balakrishnan (2015) have attempted to analyse the experiences and challenges faced by the post graduate students of two Asian countries India and Malaysia while using flipped classroom.

They found that the experience and challenges of using Flipped Classroom between India and Malaysia have much similarity with very slight differences between the countries. Both countries scored higher on Experience than on Challenges. Both countries seem to accept the use of flipped classrooms.

C. Manoharan and S. Birundha (2019) have studied the attitude of higher secondary students to flipped classroom. They aimed at maximizing learning by making use of the scientific and technological method and concepts developed in other social service.

They found that the level of acquiring the basic skills in Chemistry has not been increased due to the traditional method in the Control group and the Flipped classroom Instructional Method in Experimental group. The post-test scores of the control and experimental group differ significantly. The mean score of the experimental group is greater than that of the control group.

S. Anbalagan and J. Jayachitra (2021) have aimed to determine perceptions of the flipped classroom among B.Ed. Teacher Trainees. They selected the sample of 23 students from the department of mathematics, College of Education, Madurai, Tamil Nadu.

They found that among B.Ed. teacher trainees 17%, 43% and 39% of the students have a low, average and high level of perception of the flipped classroom. 88% either strongly agreed or agreed with this statement, whereas only 12% of students disagree and strongly disagree with the statement 'the flipped classroom is more engaging than traditional classroom instruction'.

Materials and Methods

The present study is based on both primary and secondary data. Primary data has been collected from 140 students in Virudhunagar district who were selected by convenience sampling method. The collected data was edited, tabulated and analysed for the purpose of presentation. Percentage analysis, Likert's five point scaling technique and weighted ranking technique have been applied to analyse the data. Secondary data has been collected from various journals, books and websites (Kothari, 2011).

Importance of Flipped Classroom

Flipped classroom is an approach that helps teachers to prioritize active learning during class hours by giving lecture materials and presentations to the students to be viewed at home. First, they are able to spend more time with struggling students while permitting more advanced learners the freedom to work fast.

It is a large-scale differentiated instruction, built into the curriculum at every occasion. Teachers describe a concept to students either on video or through presentation software. Students can watch the content before coming to the class and prepare for the day's activities.

This gives them freedom about how, when and where they learn and engage with the video content in the way that suits them best. As the students are already familiar with the material when class begins, they can spend their time collaborating with their teacher and other students to set their understanding, either individually or in small groups. The following are the importance of flipped classroom.

Flipped classroom provides adequate exposure by sharing learning resources with students in advance before actual classroom teaching.

The process of flipped classroom provides ample time for students to prepare the topics for the actual class.

Flipped classroom provides sufficient time and space for students to explore and experiment, to practice and analyse and develop comprehensive knowledge on a given topic. Flipped classroom helps students to develop critical thinking and higher order thinking skills. Flipped classroom develops better tools to student's knowledge and understanding.

Flipped classroom provides opportunities for the teacher to organize appropriate learning activities for developing comprehensive knowledge and maximize learning outcomes.

Flipped classroom is a suitable learning approach for the 21st century learners. Flipped classroom explores various tools and techniques of educational technology and integrates in ensuring learning outcomes in the classroom.

Maximise important interaction between teacher and student

Maximise significant interaction between two students

Minimise diversions in the classroom

Maximise learning outcomes through student's active participation

Flipped classis one of the best pedagogy which empowers teachers to engage students rationally, stimulates individualised learning and saves instructional time for organizing important activities, problem solving and developing cognitive thinking.

Socio Economic Profile of the Respondents

The opinion of students about flipped class room may be influenced by socio economic variables such as age, gender, educational qualification, monthly income of the family and daily usage of internet. Hence, these variables of the respondents were collected and tabulated in Table 1.

Table 1 depicts that out of 140 respondents surveyed, 54 (38.58 %) are in the age group of 17 - 20; 76 (54.29%) are male; 68 (48.57%) are studying under graduate course; 56 (40.00%) have monthly income of above 45, 000 in their family and 46(32.86%) are using internet from 1 to 3 hours daily.

Awareness of Students about Interactive Pedagogical Tools

Virtual learning helps the faculty to engage students. With the pedagogical tools for teaching, higher educational institutions can develop a culture of learning, create openness and trust, allows students to create, innovate, share ideas and resources, engage better, self-reflect, improve and peer review. Interactive pedagogical

tools used by the educators for the active participation of students are Game-based learning, Flipped classroom, Blended learning, Computational thinking, Experiential learning, Embodied learning, Personalized learning and Inquiry-based learning. These pedagogical tools are given to the respondents and they were asked to mention their awareness about the tools used by the educators which is presented in Table 2.

Out of 140 respondents surveyed, all respondents are aware of flipped classroom and blended learning and 85.71 per cent respondents are aware of personalised learning.

Opinion of Students about the Benefits of Flipped Classroom

Technology allows teachers to make most of the classroom time to foster student-driven learning. Currently, high schools and institutions of higher education are leading the charge in adopting the flipped classroom model. Flipped classroom places students as active participants in their own learning and provides several benefits.

First, when students have access to direct instruction at home, whether through video or text, they can review the concept multiple times at their own pace. Secondly, when class time is spent by students to apply, analyze, evaluate, and create, the instructor can observe, informally assess, and scaffold as needed.

Finally, one of the greatest benefits of flipped classroom is to increase student engagement. Flipped classroom has been shown to increase student attendance and increase motivation, which can be a key element in the language acquisition process. The following are the various benefits of flipped classroom that were given to the respondents. They were asked to state their opinion about the benefits. To quantify their opinion Likert's five point scaling technique has been used and the results were shown in Table 3.

From the above table it is clear that out of 140 respondents surveyed, the benefit 'Offer more opportunities to interact' secures first rank with the mean score of 4.10 points; the benefit 'Able to learn more deeply and retain material' gets second rank with the mean score of 3.69 points because they have more ownership over the learning process and the benefit

'Able to gain a more complete understanding of content' secures third rank with the mean score of 3.64 points.

Challenges faced by the students on the adoption of flipped Classroom

The flipped classroom strategy is one of the modern strategies to overcome the traditional of higher education by reaching effective integration of technology due to its huge potential to change the methods and strategies of internet-based learning and education (Seery, 2015). The use of flipped classroom is not limited to certain groups of learners, a specific curriculum, or a particular content area. The common challenges faced by the respondents in the adoption of flipped classroom are lack of technological knowledge, limited access to content, overwhelming workload, lack of out of class support and disengagement in learning. These challenges were given to the respondents and they were asked to rank them. Weighted ranking technique has been applied to analyse the challenges faced by the respondents in the adoption of flipped classroom. The results have been tabulated in Table 4.

It is inferred from Table 4 that the first and foremost challenge faced by the respondents in the adoption of flipped classroom is 'limited access to content' because of poor network connectivity. This challenge secures first rank with the mean score of 3.54 points.

The challenge 'overwhelming workload' gets second rank with the mean score of 3.26 points because the respondents felt that the pre-class workload of flipped classrooms exceeded that of a traditional classroom. The challenge 'lack of out of class support' gets third rank with the mean score of 3.23 points. The challenges 'lack of technological knowledge' and 'disengagement in learning' secures fourth and fifth ranks respectively.

Suggestions

In order to increase the usage of flipped classroom as an effective and interactive pedagogy, in the light of inferences of the study, the following suggestions are to be made:

Teachers should arrange the places of library and computer lab in schools and colleges to watch the digital content during extended hours and ensure the students for easy access to content.

Table.1 Socio Economic Profile of the Respondents

Socio Economic Variables		Number of Respondents	Percentage to Total
Age (in years)	Below 17	30	21.43
	17– 20	54	38.57
	20 – 23	46	32.86
	Above 23	10	07.14
Gender	Male	76	54.29
	Female	64	45.71
Course Studying	UptoHSC	26	18.57
	Under Graduate	68	48.57
	Post Graduate	34	24.29
	others	12	08.57
Monthly income of the family (in Rupees)	Upto 15,000	16	11.43
	15,000 – 30,000	22	15.71
	30,000 – 45,000	46	32.86
	Above 45,000	56	40.00
Daily usage of Internet	Below 1 hour	10	07.14
	1-3 hours	46	32.86
	3- 5 hours	32	22.86
	5-7 hours	28	20.00
	Above 7 hours	24	17.14

Source: Primary data

Table.2 Awareness about Interactive Pedagogical Tools

Pedagogical Tools	With Awareness	Without Awareness	Total
Game-based learning	88 (62.86)	52 (37.14)	140 (100)
Flipped classroom	140 (100)	0 (0)	140 (100)
Blended learning	140 (100)	0 (0)	140 (100)
Computational thinking	67 (47.86)	73 (52.14)	140 (100)
Experiential learning	92 (65.71)	48 (34.29)	140 (100)
Embodied learning	85 (60.71)	55 (39.29)	140 (100)
Personalised learning	120 (85.71)	20 (14.29)	140 (100)
Inquiry-based learning	87 (62.14)	53 (37.86)	140 (100)

Source: Primary data

Figures in Parentheses denote Percentages

Table.3 Opinion of Respondents about the Benefits of Flipped Classroom

Benefits	Strongly Agree	Agree	No opinion	Disagree	Strongly disagree	Total Score	Mean Score
Creates a strong learning community	36 (180)	28 (112)	42 (126)	18 (36)	16 (16)	470	3.36
Able to gain a more complete understanding of content	48 (240)	34 (136)	32 (96)	12 (24)	14 (14)	510	3.64
Offer more opportunities to interact	62 (310)	46 (184)	22 (66)	4 (8)	6 (6)	574	4.10
Able to learn more deeply and retain material	38 (190)	54 (216)	26 (78)	10 (20)	12 (12)	516	3.69
Developing metacognitive abilities	28 (140)	30 (120)	44 (132)	18 (36)	20 (20)	448	3.20
Enhancing interpersonal skill	22 (110)	52 (208)	34 (102)	14 (28)	18 (18)	466	3.33
Increased opportunity for feedback	34 (170)	12 (48)	32 (96)	14 (28)	48 (48)	390	2.79
Improving engagement with the content	18 (90)	32 (128)	36 (108)	30 (60)	24 (24)	410	2.93
Improving critical thinking	14 (70)	16 (64)	54 (162)	48 (96)	8 (8)	400	2.86
Provides an enjoying learning experience	20 (100)	30 (120)	18 (54)	44 (88)	28 (28)	390	2.79
Helps to learn professional and academic skill	8 (40)	22 (88)	62 (186)	26 (52)	22 (22)	388	2.77

Source: Primary data

Table.4 Challenges faced by the Respondents on the adoption of flipped Classroom

Challenges	Ranks					Total Score	Mean Score	Rank
	I	II	III	IV	V			
Lack of technological Knowledge	20 (100)	36 (144)	24 (72)	26 (52)	34 (34)	402	2.87	IV
Limited access to content	48 (240)	26 (104)	34 (102)	18 (36)	14 (14)	496	3.54	I
Overwhelming workload	30 (150)	34 (136)	40 (120)	14 (28)	22 (22)	456	3.26	II
Lack of out of class support	38 (190)	28 (112)	22 (66)	32 (64)	20 (20)	452	3.23	III
Disengagement in learning	14 (70)	28 (112)	40 (120)	12 (24)	46 (46)	372	2.66	V

Source: Primary data

Teachers should estimate the time required for traditional homework and align their pre-class activities of flipped classroom accordingly to retain the workload of traditional classrooms. Teachers should create an online discussion forum for students to post their questions and open lines of communication to interact with each other and may also provide necessary assistance during

outside-of-class. They may also use many learning management systems (e.g., Blackboard, Canvas, Moodle) already have built-in discussion forums.

Teachers should prepare their students gradually before implementing their flipped classroom fully. For that purpose they may asked the students to view a video

lecture during class time. At the same time, they should introduce some cognitive skills such as making their own notes while watching the video lectures to the students.

Teachers should divide their long instructional video presentation into a series of short videos to reduce the students' disengagement in learning and to make them actively engaged in learning.

Students may resist to change for a new instructional method if they do not understand its goals and benefits. So before implementing flipped classroom, teachers should make communication with students to explain the purpose of the flipped classroom and how it will help them to learn the material more thoroughly. They should also give a chance to the students to voice their concerns. Through this way teachers may provide the necessary support and directions to alleviate their students stress.

Teachers should talk with their students about their grades and homework that helps to build a strong connection.

Flipped classroom reframes the role of teachers and students by transforming their bond in the classroom. Teachers who can successfully implement technology based approaches like flipped class in their classrooms are at the forefront of present education. Flipped classroom helps students to develop independent learning skills, build a deeper comprehension of topics and catch up more easily when they are absent.

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