



FLIPPED LEARNING APPROACH IN DISTANCE LEARNING – AN EVALUATIVE STUDY

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Abstract

Over the last few months with the Covid – 19 situation, teaching learning has been enduring radical changes. There has been a swing towards learning through the distance mode of education. Distance mode of education is more student centred with teacher's role more as catalyst of learning rather than a despotic master. The purpose of this study was to examine the efficacy of flipped learning approach for distance education students. To examine the benefits, of the flipped classroom model while using technology as a supporting tool. A distance education course which was taught through the lecture method was flipped so that direct instruction occurred prior to virtual class time. Virtual classroom instruction being the independent variable with two levels, traditional and flipped, whereas, students' academic achievements, assignment activities submitted for internal assessment by pupil teachers were the dependent variables. The cognitive level of questions asked by students and teachers during class serves as a dependent variable that will explore the level of student cognition.

A sample of 62 students was randomly asked to opt for flipped or traditional class instructions. Pre-test Post-test quasi experimental design was used and MS Excel was used to analyse the data. The results of study indicated that the use of the flipped Learning was successful. Students appreciated the flexibility of the learning at their own pace and the value of interactive face-to-face class discussions. Not only did they prefer flipped learning but their academic achievements were significantly better than those being taught by lecture method.

Keywords: Flipped Learning, Higher Education, Academic Achievements, Distance Education



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Introduction

Education constantly undergoes changes, especially in the teaching – learning process. In today's situation the world is facing a pandemic condition due to Covid – 19. All the sectors of the society are affected due to this situation and so the education sector also has suffered. Major changes are seen in the teaching – learning processes. Focus on distance education is seen. Distance education or distance learning is a field of education that focuses on the pedagogy, technology, and instructional systems design that is effectively incorporated in delivering education to students who are not physically “on site” to receive their education. Instead, teachers and students may communicate asynchronously (at times of their own

choosing) by exchanging printed or electronic media, or through technology that allows them to communicate in real time (synchronously). (Moore & Kearsley, 2004, p.2). In today's world technology is used for delivering the lectures. Edu – tech tools like video conferencing are used for lecturing, the students are far apart from the teachers, but attached with each other on a virtual platform. The lectures given through virtual platform can be incorporated with a new approach – Flipped learning approach. Flipped learning means the lectures are given to students to view at home and the homework assignments are discussed in the classrooms. The flipped learning promotes an environment which increases the interaction between the students and teachers and engages the students in learning through application and practice. In this aspect, flipped learning use a student centred approach as it focuses on student learning and it places the responsibility for learning more on the shoulders of students than teachers while giving them a greater impetus to experiment (Sams, 2012).

Related Literature

The authors came across with many researches done on flip learning in the last decade. A number of those studies examined student performance. In conclusion to this study, the results are encouraging, but there is a need to look more into the influence of flipped classroom learning in distance education mode.

Reichmann and Grasha 2000, researched that there are three types of learners dependent, collaborative and independent. Instead of trying to reach each style individually (potentially tripling learning time to meet all student needs) the flipped classroom potentially meets the wide ranging learning styles of the modern classroom. In the flipped classroom, technology is used to switch lecture to homework. Students watch recorded video lectures through media such as YouTube prior to class. Then during class, students complete work that are usually given as homework for example review questions, lab reports or worksheets. Then using the flipped classroom, instructors allow students to investigate the concepts introduced during the video lecture in the way that makes them comfortable for example group work or independent reading, while focusing on gaining content knowledge (Lage, Platt and Treglia 2000).

Zappe, Leicht, Hessner LitCinger, and Lee (2009) flipped a large undergraduate architectural engineering course and the students' evaluation of the course indicated that the flipped learning had a positive impact on student learning as the students perceived the method of teaching as being more effective than lecturing and reported that they enjoyed the class and benefited from watching the lecture videos outside of class.

The flipped classroom was successfully introduced at the undergraduate level at the University of Miami, Ohio in Introduction to Economics course in the late 1990's. In their study, students could access lecture and lecture material through PowerPoint slides and recorded audio lecture, or recorded video lectures. Then the students entered class, the instructor asked and answered any questions raised. After, the class proceeded to run an economics experiment based on the material and finally students completed worksheets and review questions, which could be answered individually or in groups. Results suggested students preferred the flipped classroom to traditional lecture and instructors were similarly positive, stating they felt students were more motivated to learn. Both students and instructors commented they enjoyed the collaborative environment and the one-to-one support the flipped classroom allowed (Lage, Platt & Treglia, 2011).

Leckhart & Sheshire, 2012, Gerstein, 2011, researched that the face to face time to have a much deeper interaction between the teacher and student as they engage and interact on case studies and discuss particular problems.

The learners are able to demonstrate what they have learned and to apply the material in a way that makes sense to them. As learners make sense of their learning, they create something that is individualized, and with application to the learners' everyday lives, it extends beyond the lesson. This is the highest level of learning under Bloom's revised Taxonomy of Learning (Gerstein, 2011).

The Flipped learning promotes personalized learning as students can pause, re-watch the online video at their own pace. This is one of the major, evidence-based advantages of the use of video is that learners have control over the media with the ability to review parts that are misunderstood, which need further reinforcement, and / or those parts that are of particular interest (Gerstein, 2011).

Objectives of the Study

The study was based on the following Questions.

- 1) To what extent do the flipped learning approach leads to success in a course taught through distance education mode?
- 2) Does independent learning allow students to complete work in class, thereby reducing workload and stress in the classroom while having positive attitude towards flipped Learning?

This leads to following objectives.

- 1) To examine the efficacy of flipped learning approach in distance learning.

2) To examine the perceptions and academic results of the flipped learning while using technology as a supporting tool.

Variables of the Study

Classroom instruction being the *independent variable* with two options, lecture method and flipped learning method, whereas, students’ academic achievements, assignment activities submitted for internal assessment by students were the *dependent variables*.

Hypothesis

H1: The flipped learning approach in distance learning will increase the efficacy of learners.

H2: The perceptions and academic results will increase with flipped learning approach.

Null Hypothesis

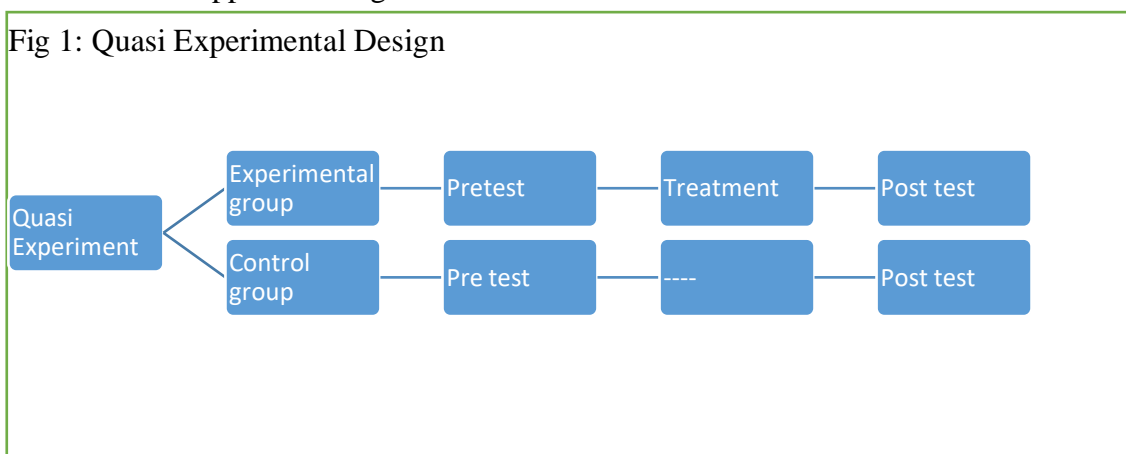
H01: The flipped learning approach in distance learning will not increase the efficacy of learners.

H02: The perceptions and academic results will not increase with flipped learning approach.

Method of Study

The research study is based on non-equivalent Quasi experimental group design. 34 students studying a distance education course were flipped. Students were asked to opt for either lecture method or for flipped learning.

Fig 1: Quasi Experimental Design



Sample

Non – probability sampling technique was used for the selection of the sample. A major advantage with non-probability sampling is that as compared to probability sampling is, it’s very cost and time-effective. It’s also easy to use and can also be used when it’s impossible to conduct probability sampling. It was also preferred as the study had a small number of students to work with. The effect of the flipped learning on student achievement levels was

tested on 62 distance education students. Students were asked to opt for lecture method learning group or flipped Learning group.

The Procedure

The control group was taught through lecture approach for 3 weeks. Similarly the experimental group was taught through flipped learning approach for same duration of weeks. Both the groups were taught by same teacher i.e. the researcher herself.

Lecture approach consisted of lessons delivered in the virtual class, reading material project work, homework and assignments. Whereas, the flipped Learning approach consisted of videos, lecture notes, reading material and references, by using *technology* as a supporting tool. Students were provided with an e-platform as a google group, where all the videos and reading material were posted. Students were responsible for watching videos or reading notes and submitting questions on the group platform. The students were requested to read the material prior to attending the class. The replies submitted about concepts after watching the videos or a summary if they comprehended the lecture were taken from students. The questions or summaries were used to stimulate the next day classroom discussions. The classroom discussions were done in the virtual classes. After this discussion, the remaining time was devoted to working on projects, group activities, discussions, readings, research and other assignments that may otherwise be assigned for homework. These discussions lead to higher order thinking skills like analysing, evaluating and creativity.

Data Collection

The data was categorised into two aspects based on the research questions.

- 1) An Achievement test of 50 marks consisting of the following
 - a) Written test on the topic taught. (25 marks)
 - b) Presentations made by students on the taught topic. (20 marks)
 - c) Discussions made by the students on the forums. (5 marks)
- 2) Student Attitude data
 - a) Self prepared Questionnaire to find the perceptions regarding T-L process.

Data Analysis

Data analysis is represented in the following table.

Table 1: Data Analysis

Research Questions	Null Hypothesis	Data Source	Data Analysis
1) To what extent do the flipped learning approach leads to success in a course taught through distance education mode?	The flipped learning approach in distance learning will not increase the efficacy of learners	Achievement test	t-test
2) Does independent learning allow students to complete work in class, thereby reducing workload and stress in the classroom while having positive attitude towards flipped Learning?	The perceptions and academic results will not increase with flipped learning approach	Questionnaire	Average scores on rating scale

1) Students performance in achievement test

H01: The flipped learning approach in distance learning will not increase the efficacy of learners.

Table no.2: 'T' test analysis of achievement test

Group	Test	N	Mean	SD	t-value	Table t-value		Degree of freedom	Significance Level
Experimental	Post	31	4.9	1.61	6.77	at 0.01 level:	2.66	60	Highly significant
Control	Post	31	7.0	0.89		at 0.05 level:	2.00		

Observation

1. Mean of post-test scores of control group is 4.9 and its standard deviation is 1.61.
2. Mean of post-test scores of experimental group is 7.0 and its standard deviation is 0.89.
3. The difference between means of control group and experimental group is 2.1. This difference is tested by using t-test.
4. The calculated t-value is 6.77 and it is greater than the table value of 't' at 0.05 and 0.01 significance level for df 60.

Interpretation

It is revealed from the Table No. 2 that difference between post-test scores of conceptual understanding of control and experimental group is found highly significant and directed towards experimental group. Therefore, the null hypothesis H01 is rejected.

Result

It was found that the flipped learning approach in distance learning increased the efficacy of learners.

2) Student Attitude data

H02: The perceptions and academic results will not increase with flipped learning approach. Perceptions regarding T-L process where students were asked to reflect on their learning throughout the process on rating scale 1 to 5 ranging from Totally disagree, Disagree, Neutral, Agree, Totally Agree.

Table no 3:

Sr no	Questionnaire Statement	Experimental group N=31 (Average Score)	Control group N=31 (Average Score)
1	The instructional Approach used in aided me in deeper conceptual understanding	2.1	4.3
2	Self-paced learning was possible	1.2	3.9
3	Collaborative learning was achieved	1.1	4.1
4	Home assignments are an essential part of learning	2.3	4.6
5	Classwork was interesting and stimulating	2.5	4.2
6	It is an interactive and a two way process	1.3	4.7
7	Assignments were stress free endeavours	1.1	4.3
8	Group projects, presentations and discussions were very effective in in-depth knowledge gains	2.1	4.1
9	Could clear my doubts freely	2.1	3.9
10	Will like to be taught with same approach again	2.1	4.3

Result

The data showed that there is a very significant difference in the perception of students regarding lecture method and flipped learning. Experimental group was satisfied with the learning experience. Projects, group activities, discussions, readings, research and other assignments were satisfactorily handled by experimental group whereas the control group was rather unsatisfied by components like pace, collaboration, and interaction.

Limitations of the Research

The main limitation of this research was the reliance on dependent variables of Academic grades assigned to the distance education students.

The relatively small sample of students was considered in this research is the second limitation.

The research was done within a shorter duration of timeframe. It would be a mistake to assess

the general utility of flipped learning or any other instructional technique from such a small study alone. Similar data collection at different institutions with different class sizes and student backgrounds over a longer period of time is necessary to evaluate whether flipped learning improves general student performance.

Conclusions

The results from this study indicate that the use of flipped learning approach the students were aided with deeper conceptual understanding. This is because students were given more opportunities for small group work and one-to-one contact with the teacher, and this would not be possible in a lecture method.

The flipped classroom learning supported self-pace learning, which lead the students to learn the concepts at their own pace and speed.

Collaborative learning is easily possible in a flipped classroom learning, this was even more easily possible with use of technology like forums and e – groups formulations.

While learning, the ‘To-do’ activities and homework activities are very important, as give opportunities for students to execute learnt exercises on their own. By this learning becomes concrete. With flipped classroom learning, home assignments became an essential part of learning, which drove learning process positively.

Further the classwork became interesting and stimulating. There was a positive two way interaction which initiated towards a stress free environment. Students could clear my doubts freely, without any stress.

Group projects, presentations and discussions were very effective and in in-depth knowledge gains. The higher order thinking skills were achieved, like analysing, evaluating and creativity. Lastly to conclude the students remarked that they would like to teach with the same approach for other academic subjects.

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