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EFFECTIVENESS OF FLIPPED LEARNING AMONG STUDENTS

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ABSTRACT

The flipped classroom is slowly but surely making its way into the educational mainstream. Homework assignments given to students and classroom instruction given by teachers have traditionally been considered the two primary categories of educational endeavor's that make up the school day. 96% of teachers responded that they understood the term "flipped learning," and 78% of those teachers said that they had used it at home to gain foundational knowledge through computer-based assignments such as brief video clips and then returned to the classroom for collaborative learning and active problem-solving. The survey was conducted recently. Among the students of varying levels who took part in this research, the intention of this study is to determine the impact of learners' effectiveness in the flipped learning environment. The methodology was then applied with 171 participants, during which the author posed questions and collected data; the findings indicate that the graduates made better use of the flipped learning platform. Students who are female have a greater impact than participants who are male, which suggests that postgraduate students believe that flipped learning is very effective for achieving their learning goals. The researcher acts as a barrier in the way of the investigation into the efficiency of the students' education.

KEYWORDS: *Flipped learning, students learning outcome, engagement, effectiveness.*

INTRODUCTION

Flipping learning has swiftly entered the educational mainstream (Tucker, 2012). Traditionally, school education has featured two main learning activities: student homework assignments and teacher-led classroom learning (Flipped Learning Network [FLN], 2014). Frequently, students receive basic knowledge from the teacher through group instruction in the classroom, and they then put what they've learned into practice through individual homework projects. Flipped learning has been a popular option as active learning proponents have questioned the efficacy of such conventional teaching techniques (Bonwell & Eison,

1991). (*Increasing Student Engagement and Retention in E-Learning Environments : Web 2.0 and Blended Learning Technologies*, n.d.)

In a recent survey, 96% of teachers said they understood the term "flipped learning," and 78% said they had used it (Bishop & Verleger, 2013). According to the research evaluated, the flipped learning technique has successfully improved student performance in K–12 settings (Bishop & Verleger, 2013; Yarbro, Arfstrom, McKnight,& McKnight, 2014).The two learning environments of traditional education are reversed in flipped learning: students first acquire foundational knowledge independently at home through computer-based assignments like brief video clips, and then they return to the classroom for collaborative learning and active problem-solving (Bishop & Verleger, 2013). (Hoult et al., 2021)

Classroom time can be utilized for active learning since direct instruction is offered via computer-based learning at home. As advocated by King, such active learning typically entails collaborative learning and problem-based learning, allowing teachers to transition from "sage on the stage" to "guide on the side" (1993).(Herr, 2001) 2015 (Yu Liang Chi) .Flipped learning is the method of teaching through interactive technology, particularly video lectures (Bishop and Verleger, 2013). An independent definition of a flipped classroom is absent (Street et al., 2015). The majority of the literature that is currently in print describes a flipped classroom as having pre-and post-class activities. Peer learning, active learning, and problem solving are the main focus of in-class activities. The usage of in-class and out-of-class time has also changed. But perhaps most significantly,(Aguinis & Kraiger, 2009) video technology is now used in teaching (Abeysekera and Dawson, 2015; DeLozier and Rhodes, 2017). According to Strayer (2012), p.172, a "flipped classroom includes the regular and systematic use of interactive technology in the learning process."In addition, a flipped classroom is "a new pedagogical style, which employs asynchronous video lectures and practise problems as homework, and active, group-based problem-solving exercises in the classroom," according to Bishop & Verleger (2013, p. 2). One of the flipped classroom's main benefits is that it engages a variety of students and is not limited to a certain subject or curriculum (Bergmann and Sams, 2012).

There are numerous variations on the flipped classroom. For instance, one strategy for a flipped classroom uses podcasts to teach students about specific ideas in a given subject area as part of their homework (Tune et al.2013). The teacher may serve as a facilitator for the students during the actual learning session, requiring them to use the knowledge they have learned through doing their homework to complete a variety of given exercises. Small groups may be given these tasks to do in order to promote peer learning. Mahdi M.

Alamri(2019)Effective peer discussion increased as a result of the flipped classroom. This came about as a result of the students' interactions with o(Maccoby, 2000)ne another outside of class during online conversations, which helped to forge close bonds between them. This helped students who were shy about speaking in front of their classmates in class feel more comfortable. Instruction from web-guided questions before class (Sharma et al., 2014).

The flipped classroom is a well-known teaching method that alternates the amount of time teachers spend teaching in class and the amount of time students spend practicing outside of class. Gwo-Jen Hwang and Chiu-Lin Lai2051. Students in the experimental group learnt using a self-regulated flipped classroom strategy, whereas students in the control group learned using a traditional flipped classroom strategy(*Flipping Out! A Case Study on How to Flip the Principles of Economics Class...: EBSCOhost*, n.d.; Vazquez & Chiang, 2015). A quantitative methodology was used to carry out the investigation. A performance test as well as self-efficacy and self-regulation questionnaires were the tools employed.(Hoult et al., 2021; Phillips & Imhoff, 1997)

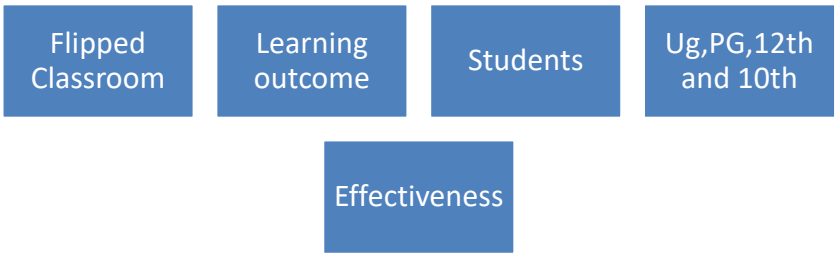
These outcomes also matched the learning log correlation findings, which demonstrated a connection between the students' self-assessment scores and the subsequent goal-setting and performance evaluation. Although there was no discernible difference in the dimension of environmental structuring, it makes sense because both groups of students learnt using similar strategies (such as in-class discussions and outside of class e-book learning) and in the same locations (i.e., in class or at home).

A different type of educational setting is the flipped classroom (Baker 2000; Lage et al. 2000). The following are the top thre(*Effectiveness of a Flipped Classroom in Learning Periodontal Diagnosis and ...: EBSCOhost*, n.d.; Lee & Kim, 2018)e advantages of using the flipped classroom strategy: students have better opportunities for active, interactive, and collaborative activities during face-to-face class time; (3) more in-class time can be committed by the teaching staff, which can help to provide feedback and monitor student performance. Online lectures also allow students to watch lectures at their own pace. According to Mojtahedi et al. (2020), it is possible to promote student engagement, interaction, and collaborative learning by substituting activities like workshops for lectures during in-class time (Flores et al. 2016).(Zupanic et al., 2019)

LITERATURE REVIEW

Faculty development is crucial to successful flipped classroom sessions. Because students cannot ask questions while watching videos at home, a significant amount of preparation time is required to prepare a brief but well-articulated (Wozny et al., 2018)video presentation(*Evaluating the Flipped Classroom: A Randomized Controlled Trial: EBSCOhost*, n.d.). Instructors need to be schooled in the components of creating an effective flipped class. Classrooms must be set up to encourage small-group discussions with enough contact between students and teachers. When there are many students in a class, it could be challenging to meet this need. Exercises in the classroom should be designed to encourage conversation and active learning rather than merely independent learning. In order to effectively facilitate learning, instructors must take an active role. They must be ready to respond to inquiries, correct misunderstandings, offer feedback, promote conversation and active learning, and guide students in the proper direction. Without the proper training, faculty members might be more inclined to take a more passive position, which would limit the effectiveness of the exercises conducted in the classroom. It's important to strike a delicate balance between actively guiding the kids and remaining unobtrusive.(Dallery et al., 2013) Throughout the entire DTP exercise in the classroom, a faculty member was constantly moving among the groups. (Cliff Lee, Soo-Woo Kim)(Dallery et al., 2013)

CONCEPTUAL MODEL



STATEMENT OF THE PROBLEM

Teaching through video lesson are the good technique in that direction. The effect of viewing texts, images, audios and videos strengthens and enriches the understanding of the pupils and facilitates mastery over the content. Higher Secondary Computer Science Subject is more suitable to check the effectiveness of flipped learning and blended learning because the subject involves lots of computer activities in the regular classes. Hence the researcher has taken the present study on Effectiveness of Flipped and Blended Learning on Achievement in Computer Science.

RESEARCH OBJECTIVES

The impact of learners' effectiveness in the flipped learning environment.

HYPOTHESIS

H0: There is no significance differences between the effectiveness of flipped learning among students

H1: There is a significant difference between the effectiveness of flipped learning among students.

RESEARCH METHODOLOGY

VARIABLES OF THE STUDY

Independent variables: Flipped Learning and Blended learning, Gender, Family Type, Parental Qualification, Parental Occupation, Parental Monthly income, Dwelling House, Usage of Gadget and whether they like Online Learning or not.

Dependent variables: Student's achievement in criterion test on XI Flipped learning among the students studying Standard 12^{th}, undergraduation and post-graduation.

Experimental designs provide a means to compare groups. However, as there is no randomization it is only partly like true experimental design. They control but not all extraneous variables, which give threat to the internal validity of the experiment. The pre-test and post-test equivalent group experimental design was adopted by the investigator. The experimental group was taught using blended learning, whereas the control group was taught using conventional teaching methods.

RESEARCH DESIGN

The research design refers to the overall strategy that a research chooses to integrate the different components of the study in a coherent and logical way, thereby, ensuring researcher will effectively address the research problem, it constitutes the blue print for the collection, measurement, and analysis of data. It helps the researcher find solution to the identified problem logically and critically. The research design of the present study in given below.

RH refers to Right answers from the Higher achievers

RL refers to Right answers from the Lower achievers

NH refers to Number of students from the Higher achievers

NL refers to Number of students from the Lower achievers

In the present study, items with difficulty level ranging from 30% to 80% and discrimination index ranging from 0.2 to 0.8 were selected. The total number of the selected items in the final test was 40 each for flipped learning and blended learning

DATA ANALYSIS

EXPERIMENTAL GROUP DESIGN FOR FLIPPED LEARNING

GROUP TIME-1 TIME-2 TIME-3

Experimental Group - I

(Flipped Learning)

Pre-test Treatment

Post-test

Control Group - I

(Traditional Learning)

Pre-test Treatment Post-test

EXPERIMENTAL GROUP DESIGN FOR FLIPPED LEARNING

GROUP TIME-1 TIME-2 TIME-3

Experimental Group - II

(Blended Learning)

Pretest Treatment Post-test

Control Group - II

(Traditional Learning)

Pre-test Treatment Post-test

For the present study the investigator has selected 120 samples from four schools from Trichy District.

RESULTS OF DESCRIPTIVE ANALYSIS

In order to analyse data, one of the measures of central tendency known as mean and one of the measures of variation known as standard deviation were computed for Criterion Test on Computer Science (Pre-test) and Criterion Test on Computer Science (Post-test) for experimental and control groups.

DESCRIPTIVE ANALYSIS OF THE ACHIEVEMENT OF XI , 12th Std, UG, PG STANDARD STUDENTS IN BEFORE AND AFTER FLIPPED LEARNING (PRE-TEST AND POST-TEST)

s.no	Description	Pre test	Post test
1	Mean	16.00	32.00
2	SD	3.067	3.12
3	Low score	3.699	3.11
4	Highest Score	11	25
5	Median	22	37
6	Mode	20	31
7	Theoretical Mean	19	19
8	Range	11	11
9	N	30	30

It is evident from the above table that the median value of the experimental group in post-test is 31.50 compared to the median value of 18 in the pretest. The highest score of the experimental group in post-test is 38 and the lowest score of the experimental group in post-test is 26. The highest score of the experimental group in pretest is 23 and the lowest score is 11.The range of the experimental group in the pretest and post-test is 12. The mean value of the experimental group in post-test is 32.03 with standard deviation of 3.12. The mean value of the experimental group in pre test is 16.90 with standard deviation of 3.49. In all the cases, the achievement of XI standard students in experimental group in post-test is higher than the pretest. It is proved from the above table that the achievement of XI Standard students in computer science belonging to flipped learning group after the treatment is high. Hence, it may be interpreted that the flipped learning approach has given positive impact on the XI standard students' achievement in computer science.

DESCRIPTIVE ANALYSIS OF THE ACHIEVEMENT OF XI STANDARD STUDENTS IN COMPUTER SCIENCE BEFORE AND AFTER BLENDEDLEARNING (PRE-TEST AND POST-TEST)

It is evident from the above table that the median value of the experimental group in post-test is 33 compared to the median value of 17 in the pre-test. The highest score of the experimental group in post-test is 38 and the lowest score of the experimental group in post-test is 33. The highest score of the experimental group in pre-test is 23 and the lowest score is 10.The range of the experimental group in the pre-test and post-test is 13. The mean value of the experimental group in post-test is 32.73 with standard deviation of 3.32. The mean value of the experimental group in pre-test is 16.67 with standard deviation of 3.82. In all the cases, the achievement of

XI standard students in experimental group in post-test is higher than the pre-test. It is proved from the above table that the achievement of XI Standard students in computer science belonging to blended learning group after the treatment is high. Hence, it may be interpreted that the blended learning approach has given positive impact on the XI standard students' achievement in computer science.

CONCLUSION AND DISCUSSION

The present findings are derived from the experiment conducted to find out the effectiveness of flipped learning and blended learning on the achievement of XI standard students' achievement in computer science. The investigator developed and validated flipped learning and blended learning package for the XI standard computer science students. The developed and validated flipped learning and blended learning packages were experimented with XI standard students.

LIMITATIONS AND FURTHER RESEARCH

The present study is conducted only with XI standard students in Trichy region. Metropolitan city. It may be extended to other cities in Tamil Nadu. The level of knowledge in Tamil varies from district to district. The present study is conducted only at higher secondary level. It may be extended to other level of students such as high school level and arts and science college level. The flipped learning has not been effective with regard to the following variables: 1. Students having illiterate father, 2. Students having illiterate mother and 3. Students having mother's education level as higher education.

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