ISSN: P-2455-0515
E- 2394-8450

Educreator Research Journal

VOLUME-X, ISSUE- III MAY - JUNE 2023

Original Research Article

EXPLORING THE EFFECT OF FLIPPED CLASSROOM MODEL ON SELF-EFFICACY OF STUDENT-TEACHERS'

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Abstract:

Flipped classroom model is a form of blended learning that combines both face-to-face and online learning and at the same time it flips the learning process i.e. learning starts at home and homework which is termed as classwork is completed in the form of tasks and activities during class time. The study investigates the effect of flipped classroom model based intervention program on self-efficacy of student-teachers in the experimental group and traditionally taught the control group as per the quasi-experimental design. The results indicate that there is a significant increase in the self-efficacy of student-teachers in the experimental group.

Keyword: *Flipped Classroom Model, Self-Efficacy, B.Ed Student-Teachers*

Introduction:

A person's life can be greatly impacted by their education. Through the development of hands-on and mind-on approaches towards teaching and learning, education should have the capacity to improve intellectual engagement and facilitate deep comprehension. The education system has been improved and maintained using a variety of channels and techniques in order to make it the most beneficial for students. The internet is one such addition to the educational system. The introduction of the internet has helped to improve education, which is crucial for an individual's future. India is investing in its education system and fundamental classrooms to foster learners, using ICT-based or ICT-integrated education to make education more learner-centric.

A type of education known as blended learning combines several methods of traditional and online learning with the use of all available technology. Blended learning is collaborative in nature as it combines both online and offline learning in a seamless, integrated manner. Because blended learning recognizes that creating knowledge is a complicated process, it gives teachers and students the chance to work together to create and evaluate their learning. It is a type of instructional methodology that blends offline, physical environment with computer-assisted activities, meaning that the information is delivered online. The key strength of this strategy is that it makes the most of both face-to-face and computer-assisted instructional delivery of the content. Online learning and traditional methods are thus combined to varying degrees to form blended learning processes.

There are several unique models included in the blended learning. The flipped classroom model is just one example of this. In a typical educational setting, lessons on a concept are taught in class, and afterward, homework is assigned for completion at home. However, in a flipped classroom, learners receive learning

ISSN: P-2455-0515
E- 2394-8450

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resources like audios, videos, etc. to go through and understand at home and "homework" then becomes "classwork" wherein the learners are expected to work on small activities/ tasks either in small groups or individually.

The traditional lecture and assignment components of a course are inverted in a flipped classroom. Bicen and Beheshti (2019) found that the interesting and thorough nature of flipped classroom instructional infographics stimulated students' motivations in the experimental group more than the control group, which allowed them to comprehend concepts more readily, retain knowledge more quickly, and grow more confident in the educational process. According to Barahona et al. (2022) through online content delivery and lectures, students learn at home, while teachers use class time for teacher-guided and student-led classwork. Under this structure, teachers can use class time for activities other than giving lectures. The students emphasised the necessity for this kind of technology-focused experience in order to build the skills required to put technology-assisted, student-centred teaching practises into effect. The ability to examine the content at their own pace by watching online videos and to take part in class discussions using the classroom response system were other features that the students appreciated.

The opportunity to ask questions, learn more, and apply that knowledge to the assignment right away is increased through the flipped classroom model, which also enables better information evaluation, synthesis, and analysis. In order to help students achieve lower levels of revised blooms taxonomy of learning i.e. to acquire, comprehend, and apply the knowledge they learn, learning models like the flipped classroom is really helpful as the lower levels may be achieved at home itself thereby giving scope for focusing on higher order levels during class time . This helps students establish and strengthen their higher order thinking skills. Constructivism serves as the foundation for the flipped classroom model.

Need of the Study:

Research conducted by Veeramani (2015)) found that 86% students felt that the flipped classroom approach was better at fulfilling the stated learning objectives than the conventional didactic teaching. After conducting an experimental study, Clark (2013) found that the student participants' responded well to the flipped classroom model of learning and showed a rise in engagement. Although no significant differences in academic performance were found between students using the flipped classroom model of learning and those who were taught in a traditional classroom setting. According to Schwankl (2013) the study revealed no significant differences in perception were found in survey replies, although all scores were higher for the students who were taught using the flipped classroom model. Nouri (2016) results revealed that a large majority of the students had a positive attitude towards flipped classroom. Low achievers significantly responded more positively as compared to high achievers.

The researcher's decision to think about the effects of the flipped classroom approach was justified by the studies described in the preceding discussion. A flipped classroom model is particularly useful for training future teachers because they will be exposed to it and might use it in their classes in the future. When combined with the self-efficacy variable, it essentially gives us an idea of how confident student teachers are in their ability to

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E- 2394-8450

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carry out the necessary behaviours. The researcher decided to investigate the impact of a flipped classroom intervention programme on student-teacher self-efficacy as a result. Brown (2015) found that students exposed to flipped instruction request significantly less tutoring compared to students in the traditionally taught sections of the course but did not exhibit a difference in scores on the final exam when compared to the traditional course. According to Cabi (2018), the experimental group, where students were taught using the flipped classroom model of learning, and the control group, where students were taught using the traditional classroom lectures, did not have any statistically significant differences in their scores. Carlisle (2018) students expressed less anxiety, greater amounts of self-efficacy, as well as a greater interest in mathematics within the flipped classroom on open-ended questions and interviews. Hojnacki (2018) showed that the control group continued to prefer a traditional lecture format and grammar-based instruction while the flipped classroom section gave equal preference to all formats of learning including face-to-face lecture, online videos, and interactive group work. The studies conducted on flipped classroom model belonging to different countries show that it has a positive effect on achievement, motivation, attitude and favourable perception towards flipped classroom at the same time variables like self-efficacy, self-concept, self-regulated learning etc have not been studied much in regards to flipped classroom. No studies were located by the researcher that used the flipped classroom approach in a classroom of pre-service student teachers and included self-efficacy as a variable, particularly in the Indian setting which represents the need to study such a variable.

Variables of the Study: The study has the following variables:

Independent variable: Flipped classroom Model

Dependent variable: Self-Efficacy

Operational Definition of the Terms

Flipped Classroom Model: It is an instructional setting where the students receive learning resources to learn off-campus. The students learn that content at home and do the work associated with it (apply, discuss etc. and clarify misinterpretations if any) in the classroom on-campus through a collaborative approach with their peers and their teachers too.

Self-Efficacy: It refers to a student's convictions and confidence about his/her abilities to mobilize the motivation; cognitive resources a course of action needed to excel in his/her studies and thereby achieve success

Aim of the Study: The study was conducted with the following broad aim:

- To study the effect of flipped classroom model on self-efficacy of student-teachers.

Objectives of the Study: The study was conducted with the following specific objectives:

- To develop an instructional programme for flipped classroom model in the subject of learning and teaching.
- To compare the post-test scores of self-efficacy of student-teachers of experimental and control groups.

Null Hypothesis of the Study:

- There is no significant difference in the post-test scores of self-efficacy of student-teachers of experimental and control groups.

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Methodology of the Study:

In the present study, the experimental method of the quasi-experimental experimental research design type has been used. It is further described symbolically as follows:

Pre-Test Post-Test Non-Equivalent Groups Design

O_1XO_2

O_3CO_4

Tools of the Study:

The researcher utilized Self-Efficacy Scale (D'Souza, 2007) in order to get quantitative data. The Self-efficacy Scale comprised of ten dimensions i.e. perseverance strategies (8), cognitive strategies (6), resource management strategies (6), self-regulate learning (5), ability to meet parental expectations (8, self-assertiveness (2), social self efficacy (5), academic self-efficacy (5), enlisting parental support (6). It included 25 negatively worded items and 26 positively worded items. Numerous educational experts were consulted in an effort to ensure the scale's content validity. The internal consistency reliability of the scale was found to be 0.89. The coefficient of stability obtained for test-retest reliability of the scale was 0.77. The scoring was done using four-point rating scale. Every item in the scale is marked on a 4-point scale, (Never = 1 point," "Sometimes= 2 points," "Often= 3 points," "Always= 4 points,").

Instructional Programme:

The researcher developed an instructional package for one module based on the flipped classroom model for the current study. The sessions utilising the flipped classroom model, in which the experimental group completed the course paper in the intervention programme while the control group received instruction in the same module using the conventional approach. Pre-class, in-class, and post-class activities were the three main components of the flipped classroom sessions. The purpose of the pre-class activities was to pique students' interest in learning by having them interact with learning materials (such as videos, research articles, powerpoint presentations, stories, etc.) before class. Each session also included one quick pre-class activity. Different activities, such as debates, discussions, tests, puzzles, puzzle situations, cases, and many other activities were done in class. Lastly, the post-class activity includes additional materials including links to books, research articles, websites, videos, and other materials to deepen their understanding of the subject. The pre-test was given to both the experimental and control groups by the researcher, who then conducted the intervention programme in the former and used conventional teaching methods in the latter. Again, both the experimental and control groups received the post-test. The duration of the programme 24 hours.

Sample:

The sample of the study included 106 student-teachers studying in Semester III in colleges of Education situated in Greater Mumbai, affiliated to University of Mumbai and with English as the medium of instruction. The study has used a three-stage sampling technique for selecting the sample.

At the first stage, B.Ed. colleges were selected using simple random sampling technique (lottery method). At the second stage, the selected B.Ed. colleges were classified as experimental and control groups using simple random

ISSN: P-2455-0515
E- 2394-8450

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VOLUME-X, ISSUE- III MAY - JUNE 2023

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sampling technique (tossing of a coin). At the third stage, participants of the study were selected using cluster sampling technique from the selected B.Ed. colleges. The total participants of the study were 54 B.Ed student-teachers in experimental group and 52 B.Ed student-teachers in the control group from each of the two B.Ed.Colleges.

Data Analysis:

The researcher used ANCOVA to analyze the data. The post-test scores on self-efficacy of student-teachers from the experimental and control groups were compared using ANCOVA to see if there was a statistically significant difference. Here, the pre-test scores on self-efficacy were used as co-variate. This was done since the student-teachers in both groups were not randomly selected and might have differing levels initially. The researcher statistically eliminated such initial differences by using ANCOVA.

TABLE 1.1
POST TEST SES OF EG AND CG

Groups	Experimental	Control
Observed Mean	152.19	150.27
Adjusted Mean	155.48	146.85

Comparison of Post-Test scores on self-efficacy of experimental and control groups:

The hypothesis states that there is no significant difference in the post-test scores on the student self-efficacy of student-teachers from the experimental and control groups. The data analysis shows that significant difference is found between experimental and control groups. Thus the null hypothesis is rejected. Therefore, it can be concluded that there is a significant difference between the experimental and control groups' post-test scores on student-teachers' self-efficacy.

Results:

When the technique of one-way ANCOVA was applied to compare the post-test scores on self-efficacy after partialling out the effect of pre-test scores, the F-ratio was found to be 5.08 ($p < 0.0001$). The Mean post-test score on self-efficacy from the experimental group (155.47) was found to be significantly greater than that of the control group (146.84) after controlling for the pre-test scores using ANCOVA.

Conclusion:

There is a significant difference in the post-test scores on the self-efficacy of student-teachers from the experimental and control groups. In conclusion it can be said that the flipped classroom program was more effective in enhancing the self-efficacy of the student-teachers in the experimental group than the control group.

Discussion and Implication:

The study's findings can be used to draw the conclusion that the intervention program's implementation of a flipped classroom model to teach a module of learning and teaching course paper to B.Ed student-teachers has increased the experimental group's students' self-efficacy. This is consistent with the results of some research, which showed that using the flipped classroom paradigm for learning led to significant increases in self-efficacy.

ISSN: P-2455-0515
E- 2394-8450

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VOLUME-X, ISSUE- III MAY - JUNE 2023

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Namaziandost et al. (2020) conclude that flipped classroom model was found to considerably raise the participants' self-efficacy. As demonstrated by the higher test scores after implementing the flipped classroom model, the activities in this model supports students' cognitive engagement and help them interact with the learning content more effectively than in lecture-based teaching, which ultimately enhances and promotes their perception of their self-efficacy.

The three stages in which the student teachers' learning took place are another significant component. The pre-class, the in-class, and the post-class activities in the flipped classroom sessions were divided into three key components, with well-designed exercises and games that invariably increased the student-teachers' self-efficacy with the subject matter thereby giving them more scope for convictions and confidence in their capacity and path of action required to succeed in their academics. This perspective is in line with earlier studies on self-efficacy. Fathi and Barkhoda (2021) showed that the experimental group's participants performed significantly better than those in the control group, and that flipping the classroom is an effective way to raise students' reading comprehension through increased participation in group projects and conversations. As a result, the incorporation of flipped instruction into the usual lessons may help to improve learning all around. The experimental group members may have felt more confident and self-assured as a result of having access to learning materials prior to the session. Additionally, more interaction and feedback during class time could have given the students more opportunities to feel competent, in control, autonomous, and positive about themselves, all of which would have boosted their self-efficacy. The chance to take ownership of what they learn in a flipped classroom and set a pace and level of proficiency necessary for better learning outcomes, which might have boosted their sense of efficacy. Using this program may have double benefit for student-teachers as they also get to experience flipped classroom model, understand its benefits and limitation and which may in turn help them to implement when they become teachers in future.

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ISSN: P-2455-0515
E- 2394-8450

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VOLUME-X, ISSUE- III MAY - JUNE 2023

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Cite This Article:

**** Ms. Bhindya Ramachandran & ** Dr. Shefali Pandya, (2023).*** *Exploring the Effect of Flipped classroom Model on Self-Efficacy of Student-Teachers',* ***Educreator Research Journal, Volume–X, Issue– III****, May – June 2023, 56-63.*