

CHAPTER-V

FINDINGS, DISCUSSION, AND SUGGESTIONS

This study underwent experimental research. To analyze the result of the effect of the flipped classroom on the development of Meta-cognition, Classroom Environment, and Academic Achievement among the B.Ed. students. This experimental study was conducted to find out the learning outcomes upon these three dependent variables of the study. In the flipped classroom, the hybrid pedagogy was used in the teaching-learning process as an intervention program of the experiment. The data has been analyzed in terms of pre-test, training period, and post-test of the experimental and control group to increase the level of Metacognition, classroom environment, and academic achievement of B.Ed. learners. Appropriate statistical techniques were used for the analysis and interpretation of the data. Based on the analysis and interpretation of the data, the findings are as follows:

5.1 FINDINGS

- 1) The Meta-cognition level of B.Ed. students for experimental and control groups were assessed through the self-prepared questionnaire on **Meta-cognition Scale for Teacher Trainees** and found that the Mean score of the Meta-cognition level of the experimental and control group are 178.18 and 137.17. Therefore, the Meta-cognition level of the experimental group is likely to differ from the control group, after teaching the control group through traditional teaching and

giving intervention to the experimental group. It indicates that both the groups of B.Ed. students differ significantly and respectively for the Meta-cognition level of the B.Ed. students.

- 2) The Classroom Environment level of B.Ed. students of experimental and control groups were assessed through the self-prepared questionnaire on **Classroom Environment Inventory** and found that the Mean Score of the classroom Environment level of the experimental and control group are 50.05 and 31.65. Therefore, the Classroom Environment level of the experimental group is likely to differ from control group after teaching control group through traditional teaching and giving intervention to the experimental group. It indicates that the experimental and control group of B.Ed. students differ significantly so far as the level of Classroom Environment of the B.Ed. students are concerned.
- 3) The Academic Achievement level of B.Ed. students of experimental and control groups were assessed through self- prepared Achievement Test for B.Ed. students and found that the Mean Score of the Academic Achievement of the experimental and control group are 34.40 and 21.04. Therefore, the Academic Achievement level of the experimental group is likely to differ from the control group after teaching the control group through traditional teaching and giving intervention to the experimental group. It indicates that the experimental and control group of B.Ed. students differ significantly so far as the level of Academic Achievement of the B.Ed. students are concerned.

5.2 DISCUSSION

Innovation in education is a new development and, not a destination or a limit. It will be expected to coordinate the various educators of the ecological system to implement NEP 2020 approached targets. A devoted unit of teachers organizes the structure of the advanced framework, computerized substance, and curriculum development. They are under making by the Ministry to take care of the e-instructional needs of both school and advanced Higher Education system. Since innovation is quickly advancing and needs experts to deliberately advanced e-learning. So a lively environment is required to deal with the advanced system of Education. A trained team of experts is required in the field of organization, training instructional innovation places, and in e-government, etc. are required undoubtedly. To respond to these innovative advances, the Digital India Campaign is helping to transform the whole country into a carefully engaged information society and economy. In which, while instruction assumes a basic part in this change, innovation itself likewise assumes a significant role in the improvement of instructive methods and results; along these lines, the connection between innovation and education at all levels is bidirectional.

With the speedy innovative advancement, the sheer inventiveness of well-informed instructors and business visionaries are required to meet the demands of the time. It is imperative that innovation will affect ALMOST EVERY FIELD OF EDUCATION. New advancements including man-made reasoning, AI, blockchains, handheld registering gadgets, versatile PC testing, etc. want simply change, but will also require broad exploration on the innovative as well as instructive fronts. While advancing computerized learning and training, the significance of face-to-face

learning is fully realized. Similarly, distinctive successful models of mixed learning models will be recognized for appropriate replication for various subjects. Further, if online training is combined with experiential and web-based learning, it will in general turn into a screen-blended instruction with restricted concentration concerning the social, emotional, and psychomotor components of learning.

For all these reasons, a wide range of teaching programs is being created and made accessible for students and educators at all levels. Instructing learning e-content in the continuation to be created by all States in every regional language, just as by the NCERT, CIET, CBSE, NIOS, and different bodies/foundations are doing so. They will be transferred on the DIKSHA stage. This stage may also be used for Teacher's Professional Development through e-content. CIET is a part of the strengthened body to advance and extend DIKSHA along with other teaching innovation activities. Innovation-based training stages, for example, DIKSHA/SWAYAM, are coordinated across the school and advanced education and will incorporate appraisals/audits by clients, to empower content engineers to make them easy-to-understand subject matter.

The purpose behind this study is to see the effect of the flipped classroom on Meta-cognition, Classroom Environment and Academic Achievement are to reflect positively upon other various areas rather than the goals mentioned at the beginning. These purposes are written as follows:

1. Flipped classroom enhances peer teaching-learning of B.Ed. students.
2. Flipped classroom improves the learning sessions by increasing the learning level of B.Ed. students.

3. Flipped classroom makes the classroom vibrant, interesting, and student-centered.
4. Flipped classroom improves the learning capacities of the learners.
5. Flipped classroom increases both learners' self-learning abilities including peer-to-peer learning which helps in sustaining themselves. In technology, by handling smartly, the classroom teacher can easily manage these innovative classrooms. He can take due account of individual differences and time constraints. It also contributes to the social adaptation and social inclusion of students in this field. In the end, future researches can be carried out by keeping in view this research.

5.3. EDUCATIONAL IMPLICATIONS

The present study has educational implications in the institutions especially running for educational purposes. The exploration of this study will sensitize school teachers, teacher training institutions, and parents. This study helps use such kind of teaching methodology in the classroom. Therefore, the school authorities and teachers can take a step to introduce and facilitate the school system with asynchronous methodology. The Indian Government is also in the process of establishing an Information and Communication Technology Laboratory at institutes across the country. The target was set to achieve by the end of the year 2018. At that point, each government school is presumed to be equipped with an ICT laboratory with WiFi access. The implications of the present study for various areas are as follows:

The present study has some educational implications in the offline institutes and online teaching-learning both. This study is specifically more useful for the slow learners who have less aptitude due to which they bring fewer scores, due to low pace towards learning. Therefore, it is required on the part of teachers that they should be well versed in the adoption of innovative techniques like Quizzes, H5P, and Kahoot while establishing the stage of learning.

That is why govt. of India is in the process of giving all the incentives to make India a digitalized one at all levels and we are seeing during ongoing pandemic every govt. and the private institute has become equipped with ICT Labs with WiFi facility. Here are the ways of putting research implications in force:

- Implementations for the adoption of diverse teaching strategies include Flipped pedagogy which offers a new paradigm shift towards Higher Education.
- This research implies that by adopting this strategy students can become more self-reliant in learning better through offline and online mode.
- This is a very suitable teaching pedagogy where time constrain has a very important aspect when the student has to faceless attendance. It is also useful for curbing the habit of absenteeism among students.
- If such techniques are skillfully adopted, it is expected to produce desired outcomes despite having individual differences.
- Flipping the classroom is a bridge in making a start-up of an inclusive environment.

Implications for the Course Transaction :

Planning plays an important role in all educational implementations. It is found that in this pedagogy, planning of such activities as Hot Potatoes, students discussion forum, students Peer group, reflective journal entries, and students reflection can bring desirable outcomes from the learners of Higher Education.

Implications on Motivation and strengthening of the Teachers and learners:

As suggested by flipped classroom pillars

Here the learning environment is flexible. It is a new shift towards an innovative environment. One can select the desired content, professional educators of his choice, an effective source of motivation and reinforcement towards teaching and learning. It also motivates even those students whose mission is not to leave a single student deprived of educational achievement goals.

Engagement with society

The present study will open up a whole new world of the Flip classroom that puts its effect on Metacognition, Classroom Environment, and Academic Achievement. This applied research on teaching and learning provides a powerful means to enhance the process of teaching and make the content accessible to all. To develop a world-class workforce, a flexible education system policy requires. So that it can meet the needs of lifelong learning. No student should end their educational pursuit due to the lack of availability of resources. Besides the number of initiatives, this concept is not utilized properly, keeping this in mind to bring awareness and integration of ICT which is considered as an integral part of

education, the present study has been taken into consideration for investigation. It was assumed that this pedagogy should start with teacher and training colleges. Because these institutes turn prospective teachers into stage setters for their learners.

5.4. LIMITATIONS OF THE STUDY

- 1) The researcher could carry out Qualitative research.
- 2) The researcher could follow the mixed-method approach.
- 3) The research could be conducted in government colleges also.

5.5. SUGGESTIONS FOR FURTHER RESEARCH

This Study is conducted upon a short sample of 60 students. While the constraints of the study are the same as those of the scientific studies, still some delimited constraints are also observed. On this basis, certain suggestions and recommendations are made:

- 1) The experiment is conducted on a random sample of B.Ed. students; it can be driven on the full strength of the B.Ed. students.
- 2) The current study was restricted only to the B.Ed. students in Haryana's Kaithal district; it can be conducted at any other district and area.
- 3) This study was focused solely on Kurukshetra University colleges; it can be conducted upon any other University and its affiliated colleges as well.

- 4) Here only a few teaching strategies have been used while experimenting with creative commons videos,so self-made videos through screencasting, presentation tube, and podcasting can also be used.
- 5) In this Pandemic, for the flipped classroom, the mode of delivery of innovative techniques was considered through Whatsapp only. For Online Class Canvas, Moodle, Genomio can be used as well.
- 6) Very innovative assessment techniques can even be used in these pandemics like Rubrics, Testmoz, etc.
- 7) Further D.Ed.and other courses may also apply this pedagogy.
- 8) Though it seems that this methodology and integration of ICT can create interest among the learners but on the whole, dissimilating videos require a lot of knowledge and hands-on practice. So it becomes imperative that there are lots of innovative practices available but instead of blended learning, the flipped classrooms can bring more fruitful results in the integration of both offline and online modes of teaching. It was initiated by Benjamin and AreonSam, the American Chemistry Teachers.
 - Before you flip your classroom, beinformed about the number of strategies, applicable considerations, hardships, and support systems identified in the study research literature. Consider, by which procedure flip deliberating models align with your philosophy of education. It is recommended to flip the whole course; begin with a small portion (for example, with one unit) and overtime build-up.

- Apply patience. The students will take time to get into the routine of watching videos, every previous night before the regular class. In order to become adapted the given responsibility accounts for their achievement.
- Communicate with parents and ensure that all the students have access to this innovative technology to foster digital equity. If the students do not have access, research public libraries close to their homes can be used to provide digital resources.
- It is required to take out time to become familiar with a variety of software programs and make maximum use to gain benefits to the fullest.
- Create consistent opportunities for student follow-up on the flip teaching method.
- Think of alternative instructing techniques to flip the class apart from videos lecture techniques.
- Focus less on video production and more on planning and executing engaging lessons and activities in the classroom.

The results of this study could be used to spur further research into the practical applications of technology usage in community college classrooms, whether it is utilized or not. It could also be used to educate and encourage new leadership at all levels of the community college system. It could effectively achieve goals set and implement the policies aimed at removing barriers. It could check the conditions that prevents and expansion of technology beyond on-campus conventional practices.

5.6. EXPECTED POLICY IMPLICATION OF THE STUDY

This is a new concept in the teaching-learning process of education. It is going to be very effective with the integration of ICT employed to bring new learning to the classroom. It is a unique program to support Digital India Programme 2015. After finding its effect in this experimental study, it can be helpful to frame a number of student-centered classroom activities. It can also bring fruitful results in increasing the Metacognition and Academic achievements of the students. Even self-prepared modules in this regard can be invited from different subject experts by the repository bodies. It can also benefit a large number of students from far off distance. It can facilitate their path of education unhampered due to the abundance of educational resources promoting self-paced learning.

5.7. NATIONAL IMPORTANCE OF THE STUDY

India is on the threshold of becoming a knowledge power. In a country like this, gurukuls and ashrams played an instrumental role in promoting education for over a very long period of time. The old education system rested on the promotion of culture and heritage through traditions. Education strives largely on the promulgation of its practical aspects. Merely imparting knowledge in the name of transferring the information, serves no purpose of education at all. In a country like India, rich cultural values form the very basis of education. With the advancement of information and technology, the education system has undergone a sea-change. The traditional model of education is fast replaced by technological mode.

To keep pace with this technological advancement, moral values and skill-sets have seen a great downfall. Therefore, to uplift the standards, the education system in India is all set to undergo a complete transformation through the implementation of National Educational Policy-2020. It is the first and foremost

need of the country to prepare the teaching fraternity in a manner to use technology in the classrooms. It can be foreseen that the coming generation will practice within the classroom and learn the lessons outside the classroom. The present research offers fresh perspectives by focusing on the metacognition for improving academic achievement through the flipped model of classroom teaching. This methodology would blend the popular methodologies thus presenting a hybrid and evolving learning strategy to contribute to the development of the nation.

Furthering the cause of this technical advancement, our Prime Minister of India gave us the *mantra* of Digital India launching as a campaign. The government of India's Department of Information Technology demonstrated that e-learning is a promising area. It is the first step towards computerized progress and popular digital platforms. The ongoing ICT-based educational initiatives should be optimized and expanded. The IT division refers to e-learning as training of content creation, dissemination, technology integration, and innovation. It can boost embedded learning at any point, at any location including its access to disadvantaged groups. The four points of e-Learning are tools, programming, principles, and subject matter.

The public authority additionally distinguishes the way e-Learning supplements the teaching tools of instruction. It helps in improving the learners using ICT – PCs, blended media, and web through the expansion of e-learning platforms like DIKSHA and SWAYAM. It focuses on the PAN India reach of these educational media. This fundamental goal is reinforced by the Ministry of Human Resource Development. So the achievement of this goal is left on student's improvement activity at the public level. National Mission on Education through Information and Communication Technology (NMEICT) is an ambitious project launched by the Government of India. Considering all these government goals, this research also shows that the integration of flipped classrooms can achieve far-

reaching goals through hybrid pedagogy. It significantly supports all the aspects of knowledge.

The recent rise in epidemics and pandemics necessitates that we are ready with alternative modes of quality education whenever and wherever traditional and in-person modes of education are not possible. In this regard, the National Education Policy 2020 recognizes the importance of leveraging the advantages of technology while acknowledging its potential risks and dangers. It calls for carefully designed and appropriately scaled pilot studies to determine how the benefits of online/digital education can be reaped while addressing or mitigating the downsides.

Ministry of Human Resource Development
Government of India

Online and Digital Education

- Inclusion and Access**
Enhance Educational Access To Disadvantaged Groups including Divyang students
- Blended Learning**
Emphasis on effective models of blended learning
- Content Creation**
Content creation, digital repository, and dissemination. Technology Integration In Teaching, Learning & Assessment
- Digital Platforms**
Digital platforms and ongoing ICT-based educational initiatives to be optimized and expanded
- Pilot Studies**
A series of pilot studies to be conducted
- Expansion of Platforms**
Expansion of existing e-learning platforms - DIKSHA, SWAYAM, etc.

myGov
मेरी सरकार

DIKSHA

ONE NATION
ONE DIGITAL PLATFORM

FREE ONLINE EDUCATION
swayam
शिक्षा वेब, ज्ञान वेब

In the meantime, the existing digital platforms and ongoing ICT-based educational initiatives must be optimized and expanded to meet the current and future challenges in providing quality education for all. However, the benefits of online/digital education cannot be leveraged unless the digital divide is eliminated through concerted efforts, such as the Digital India campaign and the availability of affordable computing devices. It is important that the use of technology for online and digital education adequately addresses concerns of equity. Teachers require

suitable training and development to be effective online educators. It cannot be assumed that a good teacher in a traditional classroom will automatically be a good teacher in an online classroom.

SUMMARY

ICT has brought tremendous progress in the field of education in developed and developing countries. It has revolutionized teaching and learning process too. The roles of teachers and learners have been changed in present scenario. In developed countries, ICT is used successfully in comparison to developing countries like India. In various parts of Haryana, it is used in a limited sense due to high cost and scarcity of resources. ICT has the potential to transform the nature of education, teaching methods and the role of students and teachers in the learning process. The new technologies challenge the conventional concept of both teaching and learning materials and methods. These technologies have the capacity to configure how teachers and learners access knowledge to meet this challenge. Colleges must embrace the ICT tools for teaching and learning to move forward towards transforming traditional paradigms of teaching. (Willi, Sawaer and Hutchison 1997).

The ICT comprises of computers and related software. The internet and electronic multimedia like DTH's 32 channels launched by SWYAM PRABHA, has approved a new technique of teaching known as flipped classroom. It is largely becoming part of daily existence at a rapid speed. This fast-paced popularity led to the integration of ICT into curriculum. The aim of education is to enable the students learn effectively in transforming them to become useful members of society. The process of teaching and learning is closely related. Each learner has the right to choose his own way of learning. Generally, a student demands individual attention. The tendency to take initiative and self learning makes the learners work independently. This promotes the habit of sharing their opinions with teachers. Here, the teachers act as guides and counsellors in the modern school of thought. utilization Digital India campaign involves many initiatives like educational

YouTube videos, Khan Academy and DTH 32 channels launched by Swyam Prabha paved their way to design Flipped classroom. This concept will prove extremely beneficial for those learners who need repetition of content. They require extra resources to boost their learning. So the Flipped Classroom has been found associated with Metacognition i.e. self-knowledge and self-regulation. It can make the classroom interactive and enrich the classroom environment. It can improve academic achievement of the learner to a great extent. Here, the flipped class room designed through creative commons content is an independent variable. The other three variables, Meta cognition, Class room Environment and Academic Achievement, are dependent.

The present study will open new gates of learning by using Flipped classroom and its effect upon Meta cognition, Classroom environment and Academic Achievement. This applied research provides a powerful means to improve teaching and learning by making the content affordable to all. In order to develop world class work force, the pattern of flexible education will expose the students to life long learning. This new concept of learning aims that no student should end their educational pursuit due to lack of availability of resources. Besides this, the integration of ICT is considered an integral part of the education. That is why, the present study has been chosen for research. Therefore, the focus is given to the trainee teachers from training colleges.

Significance of the Problem

India has seen a greater degree of falling standards of Education. A strong need is felt to emphasize, skill-based education and create manpower with employable attributes. In the present education system, a large number of

unemployable youth lacking in essential skills fit for any job. It is due to the formation of a system where knowledge is provided in a theoretical manner through content delivery within the classroom time. The student is left to himself for sharpening his knowledge of a particular subject. He has no access to any other learning resource in a traditional setup. But with the introduction of technologically-enabled video lectures satisfy the needs of a student at his own pace. He can access any subject material through social media or prepared by his teachers. Here, a very important concept comes to one's mind that how absenteeism and private coaching can be coped up. So the students should be given study material before teaching. Once the student goes through this material, he is confident to ask questions and clear his doubts during classroom time. In this manner, passive learning is replaced with active learning. Many types of research have been carried out to see this drastic change in the teaching and learning process. But the most significant contribution by Bergman and Aeron Sam(2007) heralded the concept of learning outside the classroom. The flipped model of teaching if studied at the level of metacognition can produce greater academic achievement. The perspective B.Ed. teachers should be trained to produce curriculum based video-lectures and reinforce the introduction of flipped learning in their future classrooms. After a careful, review of literature studied related to the study of this area, it was found that this field of research offers great scope.

Although the number of initiatives has been planned but not utilized properly due to less expertise. Keeping this in mind to bring awareness, integration of ICT is taken to be considered as an integral part of education. Therefore the use of present pedagogy is found to be useful in achieving fruitful results for the learners. With this

aim in view, the researcher has undertaken this research with the prospective teachers of teacher training colleges, to make this work more constructive.

Research gap

The main objective of the review of this related literature was to explore the previous researches related to the area of the flipped classroom, metacognition, classroom environment, and academic achievement. Various studies have been conducted in this research area in India and abroad. Despite the conditions and available resources are significantly different in developed countries, but the findings show that a similar pattern of learning exists around the world. In one study, the researcher examined that the effect of flipped classroom environment had an upper edge over the traditional classroom concerning young children of grade four. This was an interesting finding that established the fact that flipped environment can even effectively be used at a tender age. In another study, conducted by **Bajpai, (2017)** proved Kenderiya Vidyalas as pacesetters for learning through the mode of ICT and leaders to disseminate ICT skills among students. The schools, especially, located in the catchment area produced sustainable results for the effective implementation of an ICT model of learning. **Saxena & Hans, (2015)** revealed through the findings that students of B.Ed. outshine in the remarkable performance by employing the use of ICT and scored better on their tests. **Goria, (2012)** concluded from his study that the information produced by consortia can boost the reach of the learner through emerging technologies, such as RSS feeds, Google Reader, and Delicious. **Chun & Heo, (2018)** chose an instructional design to follow the process of pre-class, in-class, post-class, and reviewing resulting in self-directed learning. All the components of Ebbinghaus's forgetting curve were

carefully taken into account. These included CSC, Concepts applied, Computing, LMS, and e-learning. The most important aspect that this study involves is to establish a relation between Ebbinghaus's forgetting curve and flipped model of learning. The use of the review method and LMS makes this study unique. **Davis & Stauffe, (2015)** examined participants' performance in a post-assessment after learning a mathematical explanation through one of the following three methods of instruction: Text-only, Video-only, Video+Text. Results indicated that certain factors such as prior experience with videos affected the students' rating on the Likert-scale questions. However, despite additional factors, the percent of correct respondents on the post-assessment was significantly higher for those who were given the Video+Text method of instruction compared to the other. **Toste & Jessica, (2008)** studied the aspect of school satisfaction as experienced by the students concerning their bonding with the teachers. It was observed that students were highly satisfied with their teachers whereas teachers' response was less predictive to make any significant contribution. The researcher has a well-defined objective to establish the facts that help in building the classroom environment and make the relationship between student- teachers grow stronger. The suggestions are also made to boost this chord for achieving academic success. **Mohanty & Parida, (2016)** dealt with future research on flipped instruction with a larger sample size for educational implications, according to the report. **Ölmefors, (2016)** found that all students showed signs of a shift in mindset but there is no definite proof that their grades increased when the flipped classroom pedagogy was used. **Sun, (2015)** in his findings of this study gave a new way of thinking to the students who excel in the flipped model of Mathsclass. This was useful for those who were highly confident while learning Maths. They were found to be even more skilled through getting help

from among the peers. They saw through the barriers while learning any content. The study also reveals that they were well prepared to learn in a collaborative class. **Thomas (2003)** analyzed this selected data to reflect that the environment of classroom learning had not developed in enhancing the learners' metacognition. It was also found that grade, gender, and age significantly do not have different metacognitive orientations of the learning classroom. Further, even no interactions of the grade, gender, and age variables were found in the school. **Reining & Anthony, (2019)** reported more positive outcomes and positive feelings among the students indeed concerning the learners' experiences of the group support system. The students' group support system during their group task performed better in retaining the concepts. **Beaudin, (1998)** in his study found that teachers with a high level of CSE do not always use computers to teach. An examination of change literature provides a framework for comprehending these findings and helps in putting the need for rethinking professional development, teacher education, and classroom practice guidelines concerning computers in education. **Elian, Amman & Hamaidi, (2018)** through their findings of this study reflected upon encouraging the students of science to learn with the use of modern technology particularly from the flipped classroom. It is also suggested by the studies that education colleges should train prospective teachers to use their instructional strategies with the integration of modern theory of education. **Agamy, (2012)** in his findings supported that learner-centered interactions must be encouraged so that every student shows his best performance according to the skills acquired by this type of new learning

From the literature reviewed above, the researcher observes that only a few studies were conducted on the effect of the Flipped classroom using the DTH

channel and other creative commons resources. The creative commons tide has gained popularity these days more, due to the pandemic time. It was launched in 2017 to give impetus to the Digital India program initiated in 2015. The Flipped classroom concept came to the limelight in 2007 but little work was done in India specifically, in Haryana. Further, the findings of the previous studies attempted to deal with Meta-cognition at the junior school level, upon secondary school teacher and Metacognition orientation. The effect of the Flipped classroom using the DTH channel and other online modes on Metacognition, classroom environment, Academic achievement has not yet been explored to date. This research gap was identified by the researcher to streamline the present investigation for future implications.

Statement of the problem

Effect of Flipped Classroom Teaching on Meta-Cognition, Class room Environment and Academic Achievement of B.Ed. Students

Objectives of the study

Objective No. 1: To compare the scores of Meta-cognition between Experimental and Control group of B.Ed. students.

Objective No. 2: To compare the scores of Classroom Environment between Experimental and control group of B.Ed. students.

Objective No. 3: To compare the scores of Academic Achievement between Experimental and control group of B.Ed. students.

Hypothesis of the Study:

1. There will be no significant difference in the scores of Meta-cognition between Experimental and Control groups of B.Ed. students.
2. There will be no significant difference in the scores of Classroom Environment Experimental and Control groups of B.Ed. students.
3. There will be no significant difference in the scores of Academic Achievement between Experimental and Control groups of B.Ed. students.

➤ **Operational Meaning of Effect:** In this study, effect means when we say effects of the flipped classroom, we are referring to what happens when flipped classroom will be used.

➤ **Meaning of B. Ed.** In this study, B.Ed students refer to those students who were studying in private B.Ed colleges in the Kaithal district of Haryana state during the year 2019-2021.

➤ **Operational Definition of Flipped Classroom:**

In the present study, the meaning of flipped classroom is used to employ to see, how the flipping process can enhance the learning outcomes, level of Metacognitive and can make the learning Environment effective for B.Ed. Students. A high score exhibits that, this pedagogy can bring good grades with all three variables.

In this study flipped classrooms means to use both online and offline teaching together.

Conceptual Definition of Metacognition:

“The monitoring and control of thought” **Martinez, 2006, p. 696**

Operational definition of Metacognition

Metacognition is generally associated with a learner's perception, power, and understanding of his own learning process.

Conceptual meaning of a Classroom Environment: considering objectives beforehand influences the students' perceptions of their place in the form of the classroom, besides this proper organization it is essential to have the desired outcomes of the learner. This environment can exert both direct and indirect effects on the students. (Proshansky & Wolfe, 1974; Weinstein and David, 1987)

Operational Meaning: Here In the study, the classroom environment means students should involve, affiliate, gain student support, must have a good competitive spirit, must have rule clarity, must have teacher control and class should be innovative.

Operational Definition Academic achievement: In this study, learning outcomes have been measured through a formative test conducted by the researcher herself.

Delimitation of the study:

- 1) The investigation is confined only to two Government colleges affiliated with to same University.
- 2) The investigation will be conducted only on B.Ed. students.

- 3) All the 60 B.Ed. students will be selected for investigation.
- 4) The content will be from B.Ed. syllabus of concerned University for experimental purpose.

Methodology Used

Design of the Study

The present research aims to investigate the Effect of Flipped classrooms on Meta-cognition, Classroom environment, and Academic Achievement of B.Ed. students of Haryana. In this study, the experimental and the control group has been developed. This is carried out in a four-step process. In the first stage, colleges were explored. Then after the college was chosen for the study, which was running an annual course. As the environment has to be the same while execution, so all the setting, context, the university should remain as same was kept in mind. Then 60 students randomly were selected through the lottery method, chit of the control, and the Experiment was put in a bowl for selection for the study. In the second phase, an experiment was conducted with three interventions. Based on which, both the control and experimental group of B.Ed. students were assessed.

In the third stage, the researcher taught the control group with the traditional method and the experimental group with the Flipped classroom intervention. For that researcher choose two units for teaching and experimenting.

At Stage Four, a Post-test was taken. To assess both control and intervention groups. All these four stages are presenting in a given table-.

Table-3.1.1. The methodology of the study

Stages	Control Group	Experimental Group
First stage	Selection of the groups for making control group.	Selection of the groups for making experimental group.
Experimental Stage	The flipped classroom was not used, students were taught those units with traditional methods of teaching for two of those units.	Flipped Classroom was used to teach those units for teaching B.Ed. students
Post testing	Meta-cognition, Level, Classroom Environment, and Academic achievement were evaluated after teaching	Meta-cognition level, classroom environment, and academic achievement of B.Ed. students were evaluated after the intervention

Variables used

In this research, the Flipped classroom is an independent variable while Meta-cognition, Classroom Environment, and Academic Achievement are dependent variables.

Sample of the Research: The sample of this study is comprised of 60 B.Ed. students who were selected from the RKSD College of Education, Kaithal District, Haryana state, by using a purposive sampling technique. Out of 60 B.Ed. students 30 pupils formed a control group and 30 formed an Experimental group. The sample details are provided in the given

Table 3.3.1

Samples	Experimental group N=30	Control group N=30
Total N=60	Male-14, Female-16	Male-14, Female-16

Tools used

The tools which were used to collect the data from the sample are given below :

Meta-cognition scale for teacher trainees development and validated by the researcher himself.

Classroom environment inventory constructed and validated by the researcher himself.

Academic achievement test constructed by the researcher himself.

Major Findings

- 1) The Meta-cognition level of B.Ed. students of experimental and control groups were assessed through self- prepared questionnaire on **Metacognition Scale for Teacher Trainees** and found that mean Score of the Meta-cognition level of the experimental and control group are 178.18 and 137.17 Therefore, Meta-cognition level of experimental group is likely to be differ from control group after teaching control group through traditional teaching and giving intervention to experimental group . It indicates that experimental and control group B.Ed. students differ significantly so far as Meta-cognition level of the students are concerned.

- 2) The Classroom Environment level of B.Ed. students of experimental and control groups were assessed through self-prepared questionnaire on **Classroom Environment Inventory** and found that mean Score of the classroom Environment level of the experimental and control group are 50.05 and 31.65 Therefore, Classroom Environment level of experimental group is likely to be differ from control group after teaching control group through traditional teaching and giving intervention to experimental group . It indicates that experimental and control group B.Ed. students differ significantly so far as level of Classroom Environment of the B.ED. students are concerned.
- 3) The Academic Achievement level of B.Ed. students of experimental and control groups were assessed through self-prepared Achievement Test of B.Ed. Students and found that mean Score of the Academic Achievement of the experimental and control group are and 34.40 and 21.04 Therefore, Academic Achievement level of experimental group is likely to be differ from control group after teaching control group through traditional teaching and giving intervention to experimental group . It indicates that experimental and control group B.Ed. students differ significantly so far as level of Academic Achievement of the B.ED. students are concerned.

This is depicted from the analysis of the variables that there found a difference in the scores of Meta-cognition, Classroom Environment, and Academic Achievement of the experimental and control group. Hence it is concluded that the intervention program of the flipped classroom has put their considerable effect upon the level of Meta-cognition, level of the classroom environment, and also the level of Academic Achievement. On the other hand, it has been interpreted that the level of Meta-cognition, Classroom Environment, and

Academic Achievement score of the control group was found lowered when compared with the experimental (intervention Rendering)group.

DISCUSSION

Innovation in education is a new development and, not a destination or a limit. It will be expected to coordinate the various educators of the ecological system to implement NEP 2020 approached targets. A devoted unit of teachers organizes the structure of the advanced framework, computerized substance, and curriculum development. They are under making by the Ministry to take care of the e-instructional needs of both school and advanced Higher Education system. Since innovation is quickly advancing and needs experts to deliberately advanced e-learning. So a lively environment is required to deal with the advanced system of Education. A trained team of experts is required in the field of organization, training instructional innovation places, and in e-government, etc. are required undoubtedly. To respond to these innovative advances, the Digital India Campaign is helping to transform the whole country into a carefully engaged information society and economy. In which, while instruction assumes a basic part in this change, innovation itself likewise assumes a significant role in the improvement of instructive methods and results; along these lines, the connection between innovation and education at all levels is bidirectional.

With the speedy innovative advancement, the sheer inventiveness of well-informed instructors and business visionaries are required to meet the demands of the time. It is imperative that innovation will affect almost every field of education. New advancements including man-made reasoning, AI, blockchains, handheld registering

gadgets, versatile PC testing, etc. want simply change, but will also require broad exploration on the innovative as well as instructive fronts. While advancing computerized learning and training, the significance of face-to-face learning is fully realized. Similarly, distinctive successful models of mixed learning models will be recognized for appropriate replication for various subjects. Further, if online training is combined with experiential and web-based learning, it will in general turn into a screen-blended instruction with restricted concentration concerning the social, emotional, and psychomotor components of learning.

For all these reasons, a wide range of teaching programs is being created and made accessible for students and educators at all levels. Instructing learning e-content in the continuation to be created by all States in every regional language, just as by the NCERT, CIET, CBSE, NIOS, and different bodies/foundations are doing so. They will be transferred on the DIKSHA stage. This stage may also be used for Teacher's Professional Development through e-content. CIET is a part of the strengthened body to advance and extend DIKSHA along with other teaching innovation activities. Innovation-based training stages, for example, DIKSHA/SWAYAM, are coordinated across the school and advanced education and will incorporate appraisals/audits by clients, to empower content engineers to make them easy-to-understand subject matter.

The purpose behind this study is to see the effect of the flipped classroom on Meta-cognition, Classroom Environment and Academic Achievement are to reflect positively upon other various areas rather than the goals mentioned at the beginning, These purposes are written as follows:

1. Flipped classroom enhances peer teaching-learning of B.Ed. students.
2. Flipped classroom improves the learning sessions by increasing the learning level of B.Ed. students.
3. Flipped classroom makes the classroom vibrant, interesting, and student-centered.
4. Flipped classroom improves the learning capacities of the learners.
5. Flipped classroom increases both learners' self-learning abilities including peer-to-peer learning which helps in sustaining themselves. In technology, by handling smartly, the classroom teacher can easily manage these innovative classrooms. He can take due account of individual differences and time constraints. It also contributes to the social adaptation and social inclusion of students in this field. In the end, future researches can be carried out by keeping in view this research.

EDUCATIONAL IMPLICATIONS

The present study has an educational implications in the institute specially running for the educational purpose of person with disabilities. The publication of this study will sensitize school teachers, teacher training institutions for special children and normal children, parents of mentally retarded children and parents of the children Result, Discussion and Conclusion 113 having other disabilities towards the betterment. This study is useful if such kind of teaching methodology will be used in the classroom. Therefor the school authorities and teachers can take a step to introduce and facilitate the school system with computer assisted instructions (CAI).

The Government of India is also in the process of establishing Information and Communication Technology Laboratory in every school across the country. The target set to achieve by the end of the year 2018. By this time every government school is presumed to be equipped with ICT laboratory with WiFi facility. Implications of the present study in various areas as follows:

The Present study do have some educational implications in the offline institutes and in online mode pedagogy of teaching learning both. This study is specifically more useful for the low learners who have low aptitude due to which they bring low scores due to having low pace towards learning, which have been seen through gender and area disparity too. Therefore it is required on the part of teachers they should be well versed in adopting innovative techniques like Quizezes, H5P and kahoot in while settling the stage of learning

That is why govt of India is in the process of giving all the incentives to make India a digitalized one at all levels and we are seeing that by this time of pandemic every govt and private institute has become equipped with ICT Labs with WIFI Facility. Ways of Implications at various levels are:

Implications towards adopting various teaching strategies while adopting this Flipped pedagogy which is new paradigm towards Higher Education

- This research implies that by adopting this strategy students can become more self efficient to learn better through offline and online mode.
- This is a very suitable teaching pedagogy where time constrain has a very important aspect when student has to face less attendance more likely for those who are concerned towards their absenteeism .

- If such Technique are adopted skilfully ,it is expected that ,it can bring the desired fruitful results despite of having individual differences.
- Inverting the classroom is a gateway in creating an inclusive environment .

Implications for Curriculum Transaction :

Planning plays an important role in any execution of pedagogy. It Is found that in this pedagogy planning of such activities like Classroom Transcripts ,students interview while making discussion forum ,students focus group ,research journals entries and students reflection can bring desirable outcomes from the learners of Higher Education.

Implications for Motivation and reinforcement to teachers and learners:

As Flipped classroom Pillars suggests that

Here the environment is flexible ,it is a new shift towards innovative environment , one can select the intentional content ,requires professional educators is a source of motivation and reinforcement towards teaching and learning .It also motivate even those students whose mission not to leave a single student deprived of educational Achievement goals.

Implication for society

The present study will open a whole new paradigm of Flip classroom effect upon Meta cognition, Class room environment and Academic Achievement. This applied research of teaching and learning provides a powerful means to improve teaching and learning to make content affordable to all. To develop world class work force, flexible education which serves students need give life long learning, no student should end their educational pursuit due to lack of availability of resources. Besides

number of initiatives this concept is not utilised properly, keeping this in mind to bring awareness and integration of ICT which is considered as an integral part of education, the present study has been taken into consideration for investigation. And considered its beginning should be from teacher and training colleges. Because these institutes make perspective teachers which are the stage setter for their learners.

LIMITATIONS OF THE STUDY

- 1) The researcher could carry out Qualitative research.
- 2) The researcher could follow the mixed-method approach.
- 3) The research could be conducted in government colleges also.

SUGGESTIONS FOR FURTHER RESEARCH

This Study is conducted upon a short sample of 60 students. While the constraints of the study are the same as those of the scientific studies, still some delimited constraints are also observed. On this basis, certain suggestions and recommendations are made:

- 1) The experiment is conducted on a random sample of B.Ed. students; it can be driven on the full strength of the B.Ed. students.
- 2) The current study was restricted only to the B.Ed. students in Haryana's Kaithal district; it can be conducted at any other district and area.
- 3) This study was focused solely on Kurukshetra University colleges; it can be conducted upon any other University and its affiliated colleges as well.

- 4) Here only a few teaching strategies have been used while experimenting with creative commons videos, so self-made videos through screencasting, presentation tube, and podcasting can also be used.
- 5) In this Pandemic, for the flipped classroom, the mode of delivery of innovative techniques was considered through Whatsapp only. For Online Class Canvas, Moodle, Genomio can be used as well.
- 6) Very innovative assessment techniques can even be used in these pandemics like Rubrics, Testmoz, etc.
- 7) Further D.Ed. and other courses may also apply this pedagogy.
- 8) Though it seems that this methodology and integration of ICT can create interest among the learners but on the whole, dissimilating videos require a lot of knowledge and hands-on practice. So it becomes imperative that there are lots of innovative practices available but instead of blended learning, the flipped classrooms can bring more fruitful results in the integration of both offline and online modes of teaching. It was initiated by Benjamin and AreonSam, the American Chemistry Teachers.
 - Before you flip your classroom, be informed about the number of strategies, applicable considerations, hardships, and support systems identified in the study research literature. Consider, by which procedure flip deliberating models align with your philosophy of education. It is recommended to flip the whole course; begin with a small portion (for example, with one unit) and overtime build-up.

- Apply patience. The students will take time to get into the routine of watching videos, every previous night before the regular class. In order to become adapted the given responsibility accounts for their achievement.
- Communicate with parents and ensure that all the students have access to this innovative technology to foster digital equity. If the students do not have access, research public libraries close to their homes can be used to provide digital resources.
- It is required to take out time to become familiar with a variety of software programs and make maximum use to gain benefits to the fullest.
- Create consistent opportunities for student follow-up on the flip teaching method.
- Think of alternative instructing techniques to flip the class apart from videos lecture techniques.
- Focus less on video production and more on planning and executing engaging lessons and activities in the classroom.

The results of this study could be used to spur further research into the practical applications of technology usage in community college classrooms, whether it is utilized or not. It could also be used to educate and encourage new leadership at all levels of the community college system. It could effectively achieve goals set and implement the policies aimed at removing barriers. It could check the conditions that prevents and expansion of technology beyond on-campus conventional practices.

Expected Policy Implication of the study:

This is a new concept in the teaching-learning process of education. It is going to be very effective with the integration of ICT employed to bring new learning to the classroom. It is a unique program to support Digital India Programme 2015. After finding its effect in this experimental study, it can be helpful to frame a number of student-centered classroom activities. It can also bring fruitful results in increasing the Metacognition and Academic achievements of the students. Even self-prepared modules in this regard can be invited from different subject experts by the repository bodies. It can also benefit a large number of students from far off distance. It can facilitate their path of education unhampered due to the abundance of educational resources promoting self-paced learning.

NATIONAL IMPORTANCE OF THE STUDY

India is on the threshold of becoming a knowledge power. In a country like this, gurukuls and ashrams played an instrumental role in promoting education for over a very long period of time. The old education system rested on the promotion of culture and heritage through traditions. Education strives largely on the promulgation of its practical aspects. Merely imparting knowledge in the name of transferring the information, serves no purpose of education at all. In a country like India, rich cultural values form the very basis of education. With the advancement of information and technology, the education system has undergone a sea-change. The traditional model of education is fast replaced by technological mode.

To keep pace with this technological advancement, moral values and skill-sets have seen a great downfall. Therefore, to uplift the standards, the education

system in India is all set to undergo a complete transformation through the implementation of National Educational Policy-2020. It is the first and foremost need of the country to prepare the teaching fraternity in a manner to use technology in the classrooms. It can be foreseen that the coming generation will practice within the classroom and learn the lessons outside the classroom. The present research offers fresh perspectives by focusing on the metacognition for improving academic achievement through the flipped model of classroom teaching. This methodology would blend the popular methodologies thus presenting a hybrid and evolving learning strategy to contribute to the development of the nation.

Furthering the cause of this technical advancement, our Prime Minister of India gave us the *mantra* of Digital India launching as a campaign. The government of India's Department of Information Technology demonstrated that e-learning is a promising area. It is the first step towards computerized progress and popular digital platforms. The ongoing ICT-based educational initiatives should be optimized and expanded. The IT division refers to e-learning as training of content creation, dissemination, technology integration, and innovation. It can boost embedded learning at any point, at any location including its access to disadvantaged groups. The four points of e-Learning are tools, programming, principles, and subject matter.

The public authority additionally distinguishes the way e-Learning supplements the teaching tools of instruction. It helps in improving the learners using ICT – PCs, blended media, and web through the expansion of e-learning platforms like DIKSHA and SWAYAM. It focuses on the PAN India reach of these educational media. This fundamental goal is reinforced by the Ministry of Human

Resource Development. So the achievement of this goal is left on student's improvement activity at the public level. National Mission on Education through Information and Communication Technology (NMEICT) is an ambitious project launched by the Government of India. Considering all these government goals, this research also shows that the integration of flipped classrooms can achieve far-reaching goals through hybrid pedagogy. It significantly supports all the aspects of knowledge.